THE IRON TRADE REVIEW

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STRONG, BUT QUIET,

IS PRESENT CONDITION OF PIG IRON MARKET.

Agricultural and Railroad Interests Prominent.—Wage Controversies Demand Attention.—Coke is Still Weak.

In spite of widespread reports of damages to crops, agricultural implement manufacturers continue as active buyers, and orders for steel bars are being placed in even larger tonnages than last year at full prices. This active buying followed a period of marked hesitation. Other buyers whose attitude has been somewhat in doubt, especially among railroad interests, are also more prominent in the market, and railroads are urging deliveries of rolling stock. Sales of steel rails for 1908 delivery now on the books of the Illinois Steel Co. aggregate more than 250,000 tons. Other companies have taken large tonnages, as heretofore reported, and important inquiries are pending. The present month has been productive of very large orders for structural material, and the prospect for continued demand is excellent. It is estimated that 100,000 tons will be required at Chicago and 90,000 tons at Kansas City before the close of the present year. The demand in other parts of the country is almost as heavy as in these western cities.

Pig Iron Is Firm

Buying of pig iron is in smaller volume than for many weeks. There is not the slightest indication of weakness, the small number of transactions being due to the fact that consumers are well supplied, and see no necessity for buying farther into the future. There is, however, no little interest in the market for the first quarter of 1908, and among the noteworthy inquiries pending is one for 15,000 tons for delivery during that period from a large concern whose product goes to the railroads. Another inquiry for 10,000 tons for first quarter delivery is pending in the East. The tendency toward higher prices in the British market is not so pronounced. Western melters are showing more interest in foreign iron and at Chicago a radiator company has purchased several thousand tons for use at its eastern plants.

Labor Controveries

Questions in regard to labor are attracting considerable attention. The new scale demanded by the Amalgamated Association will be considered at a conference with manufacturers to be held at Toledo, June 4. The result is in considerable doubt. Strikes of machinists in a number of cities have been declared, and others are expected early in June. Manufacturers show a determination to stand firmly for the open shop.

Coke and Old Material

Except at Cincinnati, where the coke market is more active, the demand for this fuel is clearly below the supply, and prices are low. Old material shows some improvement, but in some centers dealers are the most active buyers.

HEAVY RAIL SALES

(Special Telegram.)

New York, May 29.—The Northern Pacific has closed with the Lackawanna Steel Co. for 35,000 tons of rails, in addition to the 65,000 tons recently placed with the Illinois Steel Co. The Tennessee Coal, Iron & Ry. Co. has closed with the Southern Railway system for 30,000 tons of open-hearth rails for 1908 delivery. This last sale coming on top of the other heavy sales recently announced will put the company in a very independent attitude on any surplus tonnage it may have. The Chesapeake & Ohio has placed a contract for 11,000 tons for 1908 delivery with an eastern mill of the Corporation. Other large tonnages have been placed, but details are not yet available.

GLOWING TRIBUTE

To the Mechanical Engineer—Meeting of A. S. M. E. at Indianapolis.

(Special Telegram.)

Indianapolis, Ind., May 28.—The first session of the regular spring meeting of the American Society of Mechanical Engineers was held in the parlors of the Claypool hotel Tuesday evening. The society was welcomed by Mayor Bookwalter, who paid a glowing tribute to the part which the mechanical engineer has had in the industrial development of the country.

Among other things, he spoke of the production of power, and compared a heavy stationary engine mounted on a massive bedplate to the light automobile engine of the same power, mounted on such an insecure and vibrating foundation as an automobile frame. The ability to secure perfect results under such dissimilar conditions was genius of the highest order. In welcoming the engineers to the city Mayor Bookwalter said he would not offer them the keys of the city, as that would imply that they had something to conceal and keep locked.

Indianapolis owed much to engineers and would conceal nothing from them, but would offer the heartiest welcome.

President Hutton replied for the society. He quoted Tredgold's definition of engineering and stated that it needed enlargement to cover modern conditions; that it should include the utilization of the forces acting on the materials of nature for the benefit of man. The engineer was also an educator, and the projected trip to Purdue University would show what they were doing in that respect.

After the close of the addresses, an informal reception was held. The attendance registered at the first session was 174, giving promise of a large meeting at the Wednesday to Friday sessions.

THE WEEK IN IRON CENTERS.

PITTSBURG

Railroads Calling for Early Deliveries —Pig Iron Market Quiet.

Office of THE IRON TRADE REVIEW.
521 Park Bldg., May 29.

As far as actual new business is concerned, the past week has been quieter than any week for two or three months. There is absolutely no let up in any of the finished lines, and the brightest feature is the fact that the railroads are practically all reinstating suspended orders and asking for the earliest possible deliveries. There is an inquiry at the present time for 10,000 steel freight cars, 2,800 of these for the Union R. R., of Pittsburg, and 3,000 for the C. L. S. & E. out of Chicago. There are several inquiries ranging from 200 to 300 and up to 2,500. The delivery requirements on these are largely for the latter part of the present year, but many of them run into 1908. Pig iron has been quiet, chiefly because there is but very little last half iron to be sold and a large percentage of the inquiries being received by furnaces are for the first quarter of next year. The extreme scarcity of semi-finished material still continues and, if it were possible, the available supply in proportion to the demand is less than it has been. Small Bessemer billets during the past week have sold at between $32 and $33, maker's mill, and the minimum on last half sheet bars is $31. Aside from the business placed by the agricultural implement people, the new steel bar business has not been heavy. As far as can be learned, the only notable sale of bar iron during the week was one 2,000-ton lot divided between two producers by the Pressed Steel Car Co. The rail business has been light, very few new contracts being placed, but the inquiry ran considerably above the average, or something like 70,000 tons during the week for late 1907 and 1908 delivery. The sheet and tin plate business is seasonable. Tin plate is light as far as new contracts are concerned and specifications are only fair. On sheets specifications have been light, and from a mill standpoint there is little or nothing doing in roofing, although distributors are busy. On the finer finished lines, some little anxiety is being felt by the continued crop failure reports due to the cold weather throughout the country.

Pig Iron.—The only large tonnage reported during the week was 1,500 tons of northern No. 2 foundry iron June to September shipment, at $27 delivered. The inquiry for steel making iron has been very light and is probably due to the appreciation of consumers that furnaces are practically out of the market for the remainder of the year, except for a few small lots of prompt iron. Several small tonnages in carload lots of foundry iron have been sold, some of them at fancy prices, but the tendency as far as pig iron is concerned seems to be to hold off until the beginning of the third quarter. The large valley interests making Bessemer and basic iron report that no first quarter sales have been made and are quoting $22.50 on both Bessemer and basic for first quarter of next year. In the neighborhood of 30,000 tons of malleable Bessemer for that delivery have been sold at $22. Some of the little last half southern No. 2 foundry available has been offered at $21 Birmingham. Large southern producers have announced the withdrawal of all schedules for grades above No. 4 foundry, which is equal to gray forge or mill iron. The Tennessee company has opened its books for first quarter of next year, and is quoting $18.50 Birmingham. Spot No. 2 northern foundry is quoted nominally $26, and Bessemer and basic $24.50 to $25.00 for spot. On last half delivery we quote as follows:

Bessemer, Valley	$23.50 to 24.00
Bessemer, Pittsburg	24.40 to 24.90
No. 1 Foundry, Pittsburg	23.90 to 24.40
No. 2 Foundry, Pittsburg	23.90 to 24.40
Gray Forge, Pittsburg	22.90 to 23.40
Basic, Valley	23.50 to 24.00
Basic, Pittsburg	24.40 to 24.90

Ferro-Manganese.—A greater activity has been noticed in ferro-manganese than has been evident for some time past, and on large lots, foreign 80 per cent for prompt delivery, we quote $69 to $70 delivered Pittsburg, and for last half $66.50 to $67.00 Pittsburg.

Imported 50 per cent ferro-silicon is quoted $110 Pittsburg; domestic 12 per cent, $36; 11 per cent, $35; 10 per cent, $34; with the lower grades imported ferro-silicon, $1 higher.

Plates.—The usual run of business is current, with no features aside from the filled-up condition of mills, which makes delivery promises extend five to six months. Mills in position to give better deliveries are demanding premiums of about $2 per ton and on urgent requirements are receiving it without question. The official card of 1.70c base Pittsburg applies only to far future business. We quote:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.80c to 1.90c f. o. b. mill Pittsburg for prompt shipment and 1.70c base Pittsburg on future deliveries. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c. A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than four inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1.00c. Gages under ¼-inch to and including 3-16-inch plate on thin edges, 0.10c; under 3-16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—In new sheet business, there is very little going and specifications are only fair. This is an off time on roofing as far as the mills are concerned but distributors are very busy. There has been no change in prices and we quote as follows:

Black steel sheets one pass, cold rolled, Nos 11-12, 2.20c; Nos. 13-14, 2.25c; Nos. 15-16, 2.30c; Nos. 17-21, 2.35c; Nos. 22-24, 2.40c; Nos. 25-26, 2.45c; No. 27, 2.50c; No. 28, 2.60c; No. 29, 2.75c; No. 30, 2.85c; galvanized, Nos. 10-11, 2.65c; Nos. 12-14, 2.75c; Nos. 15-16, 2.85c; Nos. 17-21, 3.00c; Nos. 22-24, 3.15c; Nos. 25-26, 3.35c; No. 27, 3.55c; No. 28, 3.75c; No. 29, 4.00c; No. 30, 4.25c. Corrugated roofing, $1.85 per square for No. 28 painted, 2½-inch corrugation, and $3.25 per square No. 28.

Tin Plate.—A little new business is being taken on by the mills right along, but nothing out of the ordinary has developed. Specifications are normal and in May were better than was expected. On future deliveries we quote as follows:

Coke tin plate 100-pound basis, 14 x 20, $3.90 f. o. b. mill, Pittsburg district. Terms, 30 days, less two per cent for cash in ten days.

Rails and Track Material.—The actual business closed during the week under review was very small, although

the inquiries from various parts of the country aggregate something like 70,000 tons. This includes business for delivery his year and the early part of 1908. Despite the large number of contracts and heavy tonnages placed with the mills for 1907 delivery, local mills still have practically two months capacity unsold and are in shape to book business for November and December shipments. We quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $40; 12-pound, $36 to $37; 16-pound, $35 to $36; 20-pound, $34 to $35; 25 to 45-pound, $33 to $34; angle splice bars for standard sections, $1.65; spikes for forward deliveries, $2.50.

Hoops, Bands and Cotton Ties.—The anticipated falling off in the cotton tie business has arrived and between now and October 1 very little new business is expected. It is estimated that there are still about 600,000 bundles of requirements still uncovered. The specifications on hoops and bands are normal and the new yearly contracts will begin to come in about the middle of next month. We quote as follows:

Hoops in carload lots, 2c; in less than carload lots, 2.10c; bands, 1.60c; base half extras as per standard steel. cotton ties, 95½c per bundle.

Merchant Bars.—The heavy specifications against steel bar contracts continue to be received by the mills and there is considerable new business coming from all quarters. The agricultural implement people have not been coming in very strong during the week under review, and the total to that class of buyers is variously estimated from 48,000 to 55,000 tons. The bulk of implement business is not expected until about June 20 on yearly contracts beginning July 1. All of this business has been placed at the full card schedule, 1.60c base Pittsburg with extras. Bar iron prices are firm at 1.75c to 1.80c Pittsburg for shipments into this district, and 1.60c to 1.65c base Pittsburg, plus freight to point of shipment for western deliveries. While 1.80c base Pittsburg is the standing quotation of all the large producers, 1.75c can be done on a desirable tonnage. One large order placed during the past week for bar iron was the business of the Pressed Steel Car Co. amounting to 2,000 tons. We quote as follows:

Common iron bars, 1.75c to 1.80c Pittsburg in carload lots and over; 1.80c to 1.85c in less than carloads; Bessemer steel bars, 1.60c net for forward deliveries; 1.85c to 1.90c out of stock; plow and cultivator, 1.60c net; channels, angles, zees, tees, under three inches, 1.70c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 50 per cent off in carload lots, and 5 per cent off in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. The price of planished and machine straightened tire is 1.80c base, half tire extras. Iron finished tire up to 1½ inch and over to be sold on regular bar basis of 1.60c base, half extras, steel card.

Structural Material.—From a mill standpoint, the structural business is in fairly good shape and specifications are coming in freely covering a delivery period of from two months to ten weeks. These to cover structures already under contract. Fabricating companies aside from the leading interest are not overbooked and can give promises for erection earlier than has been the case for several months back. At the present time the only new inquiries in the market are on small structures. We quote as follows:

Beams and channels, 15-inch, and under, 1.70c; over 15 inches, 1.80c; zees, 1.70c; tees, 1.70c; angles from three to six inches inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.80c base.

Wire and Wire Nails.—Repetition has become monotonous in its application to the congested condition of producers of wire products. There has been no change and deliveries are as far off as ever with little prospect of catching up under the pressure of current new business. Prices are unchanged and we continue to quote:

Wire nails, jobbers' carload lots, $2; retailers' carload lots, $2.05; less than carloads, $2.10; painted barb wire, $2.15, for jobbers in carloads; retailers in carloads, $2.20; and less than carload, $2.30, with 30c for galvanizing; plain wire, $1.85 for jobbers, and $1.90 by carload.

Merchant Pipe.—The National Tube Co. card quoting consumers discounts 73 off on base sizes is still in effect, but cannot be taken as a basis for new business requiring early shipments, these prices being on contracts for delivery at the convenience of the producer. These deliveries, on account of the very heavy tonnage on the books and specified extend at least three months from date and on sizes for which there is the greatest demand, delivery promises extend as far ahead as five months. Independent companies are quoting 72 on base sizes ¾ to 6 inches, black steel, with but little better delivery promises. There is a tremendous tonnage in contemplation, but the greater part of it has not reached the actual inquiry stage. We quote the following official consumers' discounts, jobbers' discounts being one point and five higher:

	—Steel—	
	Black.	Galv.
⅛ and ¼ inch	65	49
⅜ inch	67	53
½ inch	69	57
¾ to 6 inches	73	63
7 to 12 inches	70	55
EXTRA STRONG PLAIN ENDS.		
⅛ to ¾ inch	58	46
½ to 4 inches	65	53
4½ to 8 inches	61	49
DOUBLE EXTRA STRONG PLAIN ENDS.		
½ to 8 inches	54	43

Iron Pipe.—Local producers are booked up to capacity for a period of four to five months, and are experiencing difficulty in making shipments according to contract. On base sizes to consumers the official discount of 68 and 5 off. We quote:

RANDOM LENGTHS WITH THREADS AND COUPLINGS —CARLOAD LOTS.	Blk.	Gal.
⅛, ¼, and ⅜ inch	59	43
½ inch	62	51
¾ to 6 inches	67	57
7 and 8 inch	62	46
PLUGGED AND REAMED.		
1 to 4 inch	65	55
CUT THREE TO SIX FEET.		
⅛, ¼, and ⅜ inch	55	39
½ inch	58	47
¾ to 6 inch	63	53
7 and 8 inch	58	42

Boiler Tubes.—There has been no let-up in the volume of business, both in locomotive and merchant boiler tubes, and the tonnages placed for future delivery are as heavy as they have been. We continue to quote:

	Iron.	Steel.
1 to 1½ inch	42	47
1¾ to 2¼ inch	42	59
2½ inch	47	61
2¾ to 3 inch	52	65
6 to 13 inch	42	59

2¼ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Coke.—There is practically no demand for either spot or contract coke and the market continues weak. There has been a small inquiry for foundry coke and on the lower grades of washed coke contracts have been made as low as $2.75 to $2.85 at the ovens, but on the guaranteed standard grades of foundry, coke producers are asking $3 to $3.15 for spot and the same for last half contracts. There is a surplus of furnace coke for prompt shipment and little or no demand and in many instances concessions have been made to move cars. Several sales have been made during the week at $2 at the ovens. On regular business producers are asking $2.10 to $2.20 for spot coke, and $2.25 to $2.45 for last half contracts.

Old Material.—Since last week there has been very little change. Dealers, in anticipation of higher prices on ac-

count of the scarcity and high valuation placed upon pig iron, are doing considerable speculating and paying more than consumers for material. There has been a flurry in steel scrap and dealers have been boosting prices 50 cents to $1 more than mills are willing to pay. On No. 1 wrought scrap consumers will not pay more than $19. Aside from steel everything is quiet and slow. Railroad lists are coming out earlier than usual and the new B. & O. list contains 3,675 tons of steel rails alone. For delivery in the Pittsburg district we quote:

Heavy melting scrap, $18.25 to $18.50; re-rolling rails, $19 to $19.50; bundled sheet scrap, $15.75 to $16.25; iron axles, $30.50 to $31; old iron rails, $23 to $23.50; No. 1 wrought scrap, $19 to $19.25; old car wheels, $24.50 to $25; low phosphorus scrap, $22.50 to $23; machine shop turnings, $15.25 to $15.75; axle turnings, $16.25 to $16.50; cast borings, $13.50 to $14; No. 1 cast scrap, $21 to $21.50.

CHICAGO.

Large Tonnage of Steel Rails Sold.—Other Finished Lines Active.

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block, May 28.

Rail tonnage for 1908 rolling on the books of the Illinois Steel Co., has been increased this week by 20,000 tons, bringing the total for that year placed with this interest above the quarter-million mark. A considerable tonnage of open hearth rails has gone to the Alabama mill from western roads this week, and negotiations are pending for several additional lots, including one of 50,000 tons. Buying of other finished material continues of good volume. The requirements of structural steel for factory and office construction are the heaviest in several years. One fabricator places the amount of business that will be closed in Chicago and Kansas City alone before the end of the year at 200,000 tons. Of interest to bar iron makers and consumers is the conference that will be held at Toledo, June 4 between the Western Bar Iron Association and the Amalgamated Association for a settlement of the scale for 1907-1908. While, as stated in THE IRON TRADE REVIEW last week, advances will be demanded in nearly all departments, the principal proposal of the union involves a change in the rate card by which the scale will change with every $1 advance or decline in the selling price of iron, instead of $2 as at present. Contracting for steel bars continues in good volume, and demand is also of brisk proportions for sheets, plates, pipe and tubes. Scrap is scarce and of an advancing tendency. Hoops from store advanced this week to 2.50c base.

Pig Iron.—The tone of the local market remains firm, though business is quiet. The aggregate tonnage of all transactions during the week would not average more than a good week's business for one house. Despite this lull, prices on fourth quarter deliveries have advanced $1 a ton, or to the basis of $21 Birmingham for No. 2 foundry. Third quarter southern remains at $21.50 Birmingham, and spot at $22.50 to $23 Birmingham. There is little demand for the latter, although it is very plentiful. Some inquiry has been felt for the first half of 1908, but only one sale for that delivery has been made during the week. This transaction involved 1,000 tons, and was closed on the basis of $19 Birmingham for No. 2 foundry for the first quarter, and $18.50 for the second quarter. Virginia irons are unchanged at $25 furnace for spot; $23 for the third quarter and $22 for the fourth quarter. Virginia basic is firm at $24 furnace for the entire half. Northern furnaces are accepting only occasional orders, being well sold for the year. For spot shipment, $27 Chicago is asked for No. 2, and $25 Chicago for any delivery from date to July, 1908. Western melters are interesting themselves in foreign iron to a greater extent than hitherto. A local radiator concern has bought an aggregate of several thousand tons for June, July and August shipments for consumption at its eastern plants, and a local distributing house has a cargo of Middlesboro iron en route for disposition in this section. Our quotations below are for the last half, the minimum being for the fourth quarter, and the maximum for the third quarter:

Lake Superior charcoal	$ 27.50
Northern Foundry No. 1	25.50
Northern Foundry No. 2	25.00
Northern Foundry No. 3	24.50
Northern Scotch Foundry	25.50
Ohio Strong Softeners No. 1	24.80 to 25.30
Ohio Strong Softeners No. 2	24.30 to 24.80
Southern Foundry No. 1	25.85 to 26.35
Southern Foundry No. 2	25.35 to 25.85
Southern Foundry No. 3	24.85 to 25.35
Southern Foundry No. 4	24.35 to 24.85
Southern No. 1 Soft	25.85 to 26.35
Southern No. 2 Soft	25.35 to 25.85
Southern Gray Forge	24.35 to 25.85
Southern Mottled	23.85 to 24.35
Southern Silveries, 4 per cent to 6 per cent Silicon	27.85 to 29.85
Jackson Co. Silveries, 6 per cent.	29.40 to 29.90
Jackson Co. Silveries, 8 per cent.	30.40 to 30.90
Jackson Co. Silveries, 10 per cent	31.40 to 31.90
Malleable Bessemer	25.00

Billets and Rods.—Considerable interest attaches to the inquiry of a local plant for a large quantity of forging billets. Though this order has been offered several mills, it has not yet been placed, none having sufficient capacity unsold to handle it. There is no inquiry worthy the note for wire rods. Local quotations on both billets and rods are of a nominal character. The lowest ruling prices, however, are $36 Chicago for forging billets, and $37 Pittsburg for rods.

Merchant Bars.—Buying of iron and steel bars is of good volume. Specifications also are active, every mill reporting unusual activity in this direction. Implement and car interests continue to cover freely for their forward requirements, the former contracting for July to July needs. We quote carload lots, Chicago delivery, as follows: Bar iron, 1.78c to 1.83c; soft steel bars and bands, 1.78c half extras; soft steel angles, less than 3 x 3, 1.88c; hoops, 2.18c base, full extras; planished or smooth finished tire steel, 1.98c; iron finish, up to 1½ x ½ inch, 1.93c base; iron finish, 1 ½ x ½ inch and larger, 1.78c base; channels for solid rubber tire ¾ to 1 inch, 2.28c, and 1½ inch and arger, 2.18c; smooth finished machinery steel, 2.18c; flat sleigh shoe, 1.83c; concave and convex sleigh shoe, 2.08c; cutter shoe, 2.36½c; toe calk steel 2.33c; railway spring, 1.98c; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are irregular, though the official prices are without change at 50 per cent off in car lots, and 45 per cent in less than carload lots, base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 2.25c full extras; soft steel rounds, and square, 3 in. and larger, $2 per 100 pounds base; flats, 2 inches to 4 inches by ⅛ inch and larger, $2 per 100 pounds base; 4½ inches by 5 inches and 6 inches by 5-16 inch and thicker, $2 per 100 pounds base; all ovals, half rounds, $2 per 100 pounds base; steel bands, $2 half extras; soft steel hoops, $2.40 to $2.50 full extras. Other sizes not mentioned above, $2 per 100 pounds base, plus half extras.

Plates.—The statement that the Steel Corporation is hurrying the erection of plate mills at Gary is interesting in view of the extremely crowded condition of the South Chicago mills on this product. The Illinois Steel Co. is declining orders daily; and it is doubtful if it will be able to complete this year all the contracts it has on its books. The new universal mill which was to have been completed last fall is far from completion, and the present prospects are that it will not be in operation before late this year. In the meantime, independent makers are asking from 1.80c to 2c Pittsburg for various quick deliveries. Business continues exceedingly plentiful. We quote as follows:

Plates, ¼ inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.70c to 2c Pittsburg base. For extras see Pittsburg report. Freight rate to Chicago, effective June 1, 18c per 100 pounds for carload lots, and

20c per 100 pounds for less than carload lots. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼ inch and heavier up to 72 inches wide, 2.20c; 3-16 inch up to and including 60 inches wide, 2.30c; 3-16 inch 72 inches wide, 2.55c; No. 8 up to 60 inches wide, 2.50c. Flange steel, 25c extra; heads, 25c extra.

Sheets.—So far as their ability to make deliveries are concerned, western makers of sheets are in no better position than they have been for several weeks. New tonnage is active and specifications are numerous; there is constantly enough business coming forward to more than offset that which is delivered. Prices are very firm, and premiums continue in vogue. We quote as follows:

Black sheets, Nos. 8, 9 and 10, 1.90c Pittsburg; No. 28, 2.60c Pittsburg. Galvanized sheets, No. 28, 3.75c Pittsburg. Freight to Chicago, 18c per 100 pounds for carload lots, and 20c for less than carload lots. Jobbers' prices on carload lots and less from store are as follows:

No. 10, 2.50c to 2.55c; No. 12, 2.55c to 2.60c; No. 14, 2.60c to 2.65c; No. 16, 2.70c to 2.80c; Nos. 18-20, 2.80c to 2.90c; Nos. 22-24, 2.85c to 2.95c; No. 26, 2.90c to 3c; No. 27, 2.95c to 3.05c; No. 28, 3.05c to 3.15c; No. 30, 3.35c to 3.45c. Galvanized sheets, No. 10 to 20, 3.50c to 3.55c; Nos. 22 and 24, 3.65c to 3.75c; No. 26, 3.85c to 3.90c; No. 27, 4.05c to 4.15c; No. 28, 4.25c to 4.35c; No. 30, 5.40c to 5.45c.

Structural Steel.—The volume of business pending in structural lines is large. A competent authority places the tonnage that will be let in Chicago between now and Christmas at 100,000, and in Kansas City, within the same period, at 90,000. The contract for the two bascule bridges for the Chicago & North Western Railway, mentioned last week, the steel requirements of which are 4,700 tons, has been let to the Toledo-Massillon Bridge Co., Toledo, O. The Missouri Bridge & Iron Co., St. Louis, Mo., secured the contract for the Eighteenth street bridge, St. Louis, 1,000 tons, the price being 4 21-100c per pound erected. Specifications have been received by the American Bridge Co. for two additional buildings at Gary, one an additional power house, and the other a stripper building. The same concern has also received an inquiry for figures on two car ferries for the Wiggins Ferry Co., St. Louis, 1,500 tons apiece, and for a cold storage warehouse, Chicago, 3,800 tons. A local firm of architects is also asking figures on a new mercantile building to be erected by A. L. Strauss, Chicago. No change is noted in prices, which are as follows:

Beams and channels, 3 to 15 inches inclusive, 1.70c Pittsburg. For extras see Pittsburg report. Freight rate from Pittsburg to Chicago, 18c per 100 pounds for carload lots, and 20c per 100 pounds for less than carload lots. Quotations from store are as follows:

All angles, three inches and larger, including six inches, $2.10 per 100 pounds; angles over six inches, $2.15 per 100 pounds base; beams, 3 to 15 inches inclusive, $2.10 per 100 pounds base; channels, three inches and larger, $2.10 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—The rail tonnage on the books of the Illinois Steel Co. for 1908 delivery now amounts to over 250,000; 21,000 tons were added in the week under review. The Tennessee interest closed a contract last week with a western road for 10,000 tons of open-hearth rails, and an inquiry for 50,000 tons from a southwestern road is now pending. The inquiry for light rails continues good, some desirable business having been taken in the past week. We quote as follows:

Bessemer rails, $28 to $30; less than 500-ton lots, $32; open-hearth rails, $29; light rails, Bessemer, 30 to 45-pound sections, $35; 25-pound, $36; 20-pound, $37; 16-pound, $38; 12-pound, $39, and lighter sections down to 8-pound, $45.50, all f. o. b. mill. Track supplies vary in price according to quantity and delivery. On orders accompanying rail contracts for future delivery, we quote angle bars, 1.65c; spikes, 2.35c; bolts with square nuts, 2.65c; with hexagon nuts, 2.80c. For carload lots or less, for prompt shipment, the following prices are asked: Angle bars, 2.25c to 2.75c; spikes, 2.60c to 2.70c; bolts with square nuts, 2.85c; with hexagon nuts, 3c.

Cast Iron Pipe.—Nothing of importance has developed in cast iron pipe in the past week. No large contracts have been closed, nor are any pending. Small business is brisk. Prices are without change as follows: Four-inch water pipe, $38.60; 6 to 12-inch inclusive, $37.60; 16-inch and upward, $36.60; gas pipe, $1 a ton higher.

Merchant Pipe and Boiler Tubes.—Except that business continues good, there is nothing of interest to chronicle. Deliveries are very slow. Consumers' quotations, carload lots, Chicago delivery, are given below. On steel pipe, jobbers are entitled to one point and five per cent additional. Inquiries for wrought iron pipe are referred to the Pittsburg office for prices.

The tightly sold condition of all makers, is deflecting an increasing tonnage of pipe and tubes to jobbers. Inquiries for iron pipe are quoted only on specification, though the minimum prices for black carload lots or greater, are as follows: ⅛ inch to ¼ inch, 55; ⅜ inch, 57; ½ inch, 59; ¾ inch to six inches, 64; 7 inches to 12 inches, 59. Prices on steel pipe are as follows:

MERCHANT PIPE.

	Black.	Galv.
⅛ to ¼ inch	60	44
⅜ inch	62	48
½ inch	64	52
¾ to 6 inches	68	58
7 to 12 inches	64	49

A concession of ½ to one point is allowed on carload orders. Boiler tubes are unchanged at 60 off for steel; 47½ for iron, and 42½ for seamless, base sizes, 2¾ inches to 5 inches.

Wire Products.—The pressure for deliveries under which mills are laboring may be appreciated from the statement of a large producer that its orders and specifications were never so heavy as at the present time. Comparing current business with the figures for the same period in 1906, the increase this year is represented in four figures. Prices are firm, but without change as follows:

Wire nails, $2.15; painted barb wire, $2.30; galvanized barb wire, $2.60; smooth annealed wire, $2.30; polished staples, $2.55. Carload lots to retailers, five cents higher; less than carload lots, 15 cents higher.

Coke.—Foundry cokes show no gain in strength. There is little inquiry and less buying. Standard 72-hour brands either for spot or last half delivery are quoted at $3 to $3.25 ovens.

Old Material.—The forms of scrap in most demand are cast, of all kinds, heavy melting steel, railroad malleable, borings and turnings. The strike of machinists in the eastern states has reduced the supply of borings and turnings in that territory, and eastern dealers are scouring this market for all they can obtain. Values are decidedly towards a higher basis, railroad malleable having advanced $1.50 a ton; No. 1 cast, 50 cents; railroad wrought, 25 to 50 cents; pipes and flues and country sheet, 25 cents each, and stove plate, 50 cents. Two large local consumers of heavy melting steel are asking prices on additional requirements of this material, while a car wheel interest has been a heavy buyer of malleable, steel and cast scrap. The only list of importance out is that of the Baltimore & Ohio, which is offering a total of 7,500 tons. Of this, 3,268 tons are steel rails 6 feet and over, 540 tons of No. 1 wrought and 528 tons of No. 1 cast. We have revised our prices, and quote gross tons in the first paragraph as follows:

Old Steel Rails, 3 ft. and under	$18.50 to 19.50
Old Car Wheels	25.25 to 25.75
Old Iron Rails	24.50 to 25.00
Rerolling Rails (3 feet and over)	19.00 to 19.50
Light Section Relayers, 45 lbs. and under, subject to inspection	30.00 to 32.00
Relaying Rails, subject to inspection	28.00 to 30.00
Frogs, Switches and Guards	17.00 to 17.50
Heavy Melting Steel	16.00 to 16.50

Mixed Country Steel	12.50 to 13.00

We quote net tons as follows:

No. 1 R. R. Wrought	$16.00 to 16.50
No. 2 R. R. Wrought	14.75 to 15.00
Shafting	17.50 to 18.00
Dealers Forge No. 1	13.00 to 13.50
Pipes and Flues	12.25 to 12.75
No. 1 Cast 150 lbs. and less	18.75 to 19.25
No. 1 Mill	10.00 to 10.50
Mixed Busheling (Nos. 1 and 2)	12.00 to 12.50
Country Sheet	8.75 to 9.25
No. 1 Boiler Cut	11.50 to 12.00
Boiler Punchings	15.00 to 15.50
Cast Borings	10.50 to 11.00
Mixed Borings, etc	10.50 to 11.00
Machine Shop Turnings	12.50 to 13.00
Railroad Malleable	17.25 to 17.75
Agricultural Malleable	15.50 to 16.00
Stove Plate and Light Cast Scrap	15.50 to 16.00
Old Iron Splice Bars	18.50 to 19.00

The Chicago offices of the Interstate Iron & Steel Co. have been removed from the seventeenth to the sixteenth floor of the First National Bank building.

CLEVELAND.

Heavy Buying of Steel Bars.—Pig Iron Market Quiet.

Office of THE IRON TRADE REVIEW, Browning Building, May 28.

Iron Ore.—Heavy rains and wind storms at the head of the lakes have delayed shipments considerably and there have also been some delays at lower lake ports on account of the stormy weather and the inadequate supply of cars, but on the whole the amount of ore handled during the past week has probably been as large as the tonnage of the same week one year ago.

Pig Iron.—The week has been an extremely quiet one. Sales have been few and inquiries are not numerous. Foundries appear to be pretty well supplied with iron and the spot demand is not so active. We quote, f. o. b. Cleveland, for last half delivery, as follows:

Bessemer	$23.90
No. 1 Foundry	24.50
No. 2 Foundry	24.00
No. 3 Foundry	23.50
No. 2 Southern	24.35
Gray Forge	22.50

Coke.—We quote spot furnace coke at from $2 to $2.25, and for last half at $2.25 to $2.50. For last half delivery, foundry coke is selling from $3.15 to $3.35. The market shows little, if any, sign of improvement.

Finished Material.—Heavy sales of steel bars to agricultural implement and other interests have been made within a few days, following similar transactions of the preceding week, and heavy purchases have also been made by nut and bolt concerns. The structural market is in good condition, and general conditions are regarded as very favorable by both mill representatives and jobbers. Plates continue very strong. Although one eastern mill is promising deliveries of sheared plates from six to eight weeks and universals from four to six weeks, at 1.70c, considerable premium business is being done. The prospect is that the price for anything like prompt delivery will remain at about 1.90c Pittsburg. Bar iron, which has been weak for some time, shows indications of improvement and prices are somewhat firmer. An inquiry for 4,000 tons of standard sections for a traction line is pending.

Old Material.—The old material market is firm and steady, and in some respects shows more strength. Dealers declare there is a good market at present quotations, but that tonnages are rather difficult to secure because of the tendency on the part of some interests to hold back in the expectation of higher quotations. There is considerable buying on the part of some dealers caught short, and this demand, along with that of the mills, is holding up prices well. The mills appear anxious to close for large tonnages at their own figures, which are somewhat lower than those now quoted by dealers. Cast scrap is especially strong, but wrought iron remains weak. The B. & O. railroad is asking bids for a large list of 7,000 tons. We have revised our quotations, and quote, f. o. b. Cleveland, gross tons, as follows:

Old iron rails	$24.00 to 25.00
Old steel rails (re-rolling)	17.50 to 18.50
Old steel rails (under 6 feet)	18.00 to 18.50
Old car wheels	23.50 to 24.50
Steel boiler plate	14.50 to 15.00
Steel axles	22.00 to 23.00
Malleable iron (railroad)	18.75 to 19.25
Malleable iron (agricultural)	17.00 to 17.50
Heavy steel	16.50 to 17.00
Country mixed steel	15.00 to 15.50
Low phosphorus	21.00 to 22.00

We quote net tons as follows:

No. 1 R. R. wrought	$16.50 to 17.00
No. 1 busheling	14.50 to 15.00
No. 1 machine cast	18.50 to 19.00
Iron axles	26.00 to 26.50
Axle turnings	13.50 to 14.50
Wrought turnings (free from cast)	12.50 to 13.00
Grate bars	14.50 to 15.50
Pipes and flues	14.00 to 15.00
Tank iron	12.50 to 13.50
Hoop and band iron	8.50 to 9.00
Sheet iron	7.50 to 8.50
Wrought drillings	12.50 to 13.50
Stove plate	14.50 to 15.50
Cast borings	10.75 to 11.25

CINCINNATI

Speculation as to Third Quarter Prospects—Market Is Quiet.

May 28.

Pig Iron.—Conditions in the pig iron market have made but little change during the week. There has been a moderate amount of business booked and the inquiry has been light. Prices for spot iron are unchanged, and offerings have been ample for the little demand. This market appears to be lower than some others for spot iron. Sales are still being made here at $21.50 to $22.00 Birmingham for southern iron and a very little northern iron has sold at $24.00 spot at furnace. We quote spot iron delivered Cincinnati as follows:

Southern foundry No. 1	$25.25 to 25.75
Southern foundry No. 2	24.75 to 25.25
Southern foundry No. 3	24.25 to 24.75
Southern foundry No. 4	22.50 to 22.75
Southern No. 1 soft	25.25 to 25.75
Southern No. 2 soft	24.75 to 25.25
Southern gray forge	21.75 to 22.25
Northern No. 1 foundry	25.65 to 26.65
Northern No. 2 foundry	25.15 to 26.15
Northern No. 3 foundry	24.65 to 25.65

For third quarter delivery quotations on southern iron are still $21.00 to $21.50 Birmingham, with nothing offered in the way of southern Ohio northern iron. For last quarter delivery prices range from $19.50 to $20.00 Birmingham for southern product, and $23.00 to $23.50 for southern Ohio northern iron.

For first quarter of 1908 southern iron is selling at $18.50 Birmingham, and northern iron at $22.00 for the first half of next year.

All lower grades for any delivery are subject to negotiation, as the usual differences between the grades are not applied.

Now that prices for the first quarter and first half of next year have been established, interest centers in the possibilities for the third quarter of 1907. There appears to be an ample supply of iron in the hands of consumers for present needs, and some contracts for second quarter are still unfilled, so that some second quarter iron will be delivered in the third quarter. It is well known that some southern furnaces have declined to take on forward business, in order to be in position to sell spot and early delivery iron at the strong prices that have prevailed, and in the belief that spot iron would continue to command better prices than could be realized by selling at market for forward delivery. At least seven southern stacks have adopted this policy. This, in addition to the foreign iron that is reported to be afloat consigned to houses which have representatives here, is an apparently ample supply, provided consumers are as well covered as is supposed. The amount of iron that must still be purchased for third quarter is an unknown quantity. The sources of supply given above are known, and it is also known that there is always some prompt iron to come out from furnaces that are apparently sold up. The question is, will the demand in the third quarter from uncovered consumers be sufficient to support present prices? With this situation known in the trade, there is a confident feeling in most quarters and the market is regarded as strong at present prices. We quote for last quarter delivery, delivered Cincinnati as follows:

Southern Foundry No. 1	$23.25 to 23.75
Southern Foundry No. 2	22.75 to 23.25
Southern Foundry No. 3	22.25 to 22.75
Southern Foundry No. 4	21.75 to 22.25
Southern Foundry No. 1 soft	23.25 to 23.75

Southern Foundry No. 2 soft	22.75 to 23.25
Gray Forge	20.75 to 21.00
Northern foundry No. 1	24.65 to 25.15
Northern Foundry No. 2	24.15 to 24.65
Northern Foundry No. 3	23.65 to 24.15

Finished Material.—The retailing demand is good and prices well sustained. Specifications on contracts are satisfactory. New business in car lots is rather quiet. We quote retail prices f. o. b. Cincinnati as follows:

Angles, 3 x 3 and over, 2.15c to 2.25c; beams and channels, 15 inches and under, 2.15c; small angles and architectural channels, 2.10c base; plates ¼ inch and heavier, 2.10c; 3-16 inch, 2.20c; No. 8, 2.20c; sheets (blue annealed) No. 10, 2.30c; No. 12, 2.35c; No 14, 2.40c; No. 16, 2.50c; box annealed sheets, Nos. 18 and 20, 2.65c; Nos. 22 and 24, 2.75c; Nos. 25 and 26, 2.80c; No. 27, 2.85c; and No. 28, 2.95c. Iron and steel bears, 2.00c base; boiler tubes, 60 per cent off base; turnbuckles, 45 per cent off; rivets, 3.15c base; cold rolled shafting, 45 per cent off list; steel tire, 2.10c base.

Coke.—The market is active, both in spot and contract coke. Prices are irregular. Some ovens are free sellers and seem eager to book forward business while consumers are in the mood for buying. Other coke makers are holding well to their prices and are refusing to meet buyers' views even at slight concessions. The lower quotations thus brought out by the free sellers give the market an easy appearance, but quotations are not materially changed for the week, although prices lower than given below may be heard of quite frequently. Of course, the element of quality in coke tends to make prices variable, as well as other conditions. We quote prices in the leading coke producing districts as follows:

Wise County, Va., Furnace Coke, prompt shipment	$2.75 to 2.90 per ton
Wise County, Va., Foundry Coke	3.25 to 3.50 per ton
Pocahontas Furnace Coke, prompt shipment	2.60 to 2.75 per ton
Pocahontas Foundry Coke	3.10 to 3.40 per ton
Connellsville Furnace Coke, prompt shipment	2.75 to 2.90 per ton
Connellsville Foundry Coke	3.25 to 3.75 per ton
New River Foundry Coke, prompt shipment	3.25 to 3.50 per ton
New River Furnace Coke, contract	2.75 to 2.90 per ton

*Wise County, Va., Coke on Furnace contracts is sold mainly on a sliding scale basis for pig iron prices on the following basis: $1.60 to $1.65 per ton on $9.00 pig iron, plus 17 to 18 per cent of the advance on pig iron above $9.00 Birmingham.

Old Material.—There is a steadier feeling in the market, and some changes in prices are noted. There has been a fair business. We quote:

Old No. 1 R. R. wrought net tons	$16.50 to 17.50
Cast machine and f'dy, net tons	18.50 to 19.50
Old iron rails, gross tons	24.50 to 25.50
Old steel rails, gross tons	18.00 to 19.00
Old short lengths, gross tons	19.00 to 20.00
Old iron axles, net tons	25.50 to 26.00
Heavy melting scrap, gross tons	20.00 to 21.00
Stove plate, net tons	15.00 to 16.00
Wrought turnings, net tons	13.00 to 13.50
Cast borings, net tons	11.50 to 12.00
Car wheels, gross tons	24.00 to 24.50

PHILADELPHIA.

Buying is Active and Market Outlook Very Bright.

May 28.

Pig Iron.—Those consumers who have been holding off in the hope that prices would weaken seem to have finally made up their minds that they have been playing a losing game, and their orders for the last half and quarter are now coming in in a volume that keeps the market strong and active, without any undue excitement. It has now come to be generally recognized that prosperity for the remainder of 1907 is assured and that no recession in prices is at all probable. Some big sales of basic iron are reported to Conshohocken interests at about $23.50 for the last half, and there have been sales of No. 1 X foundry at $26. Third quarter No. 2 commands $25, with stiff premiums for spot iron. Some furnaces, which have followed a conservative policy report a little spot on hand, but many have withdrawn entirely from the market for the third quarter and report but little tonnage left open for the last quarter. There still seems to be a disposition to avoid commitments for the first quarter of 1908, notwithstanding the reports of large sales which come from the west. Prices for the last half, which show a stiffening tendency, may be quoted as follows:

No. 1X Foundry	$25.50 to 26.00
No. 2X Foundry	24.25 to 25.00
No. 2 Plain	23.75 to 24.25
Standard Gray Forge	22.75 to 23.25
Basic	23.50 to 24.00
Low Phosphorus	27.00 to 27.50

Finished Material.—While there is some talk of an easier tone in the finished product market, most mills are still asking from two to four months for the delivery of orders. Structural material is in especially good demand. Prices, which may be shaded a little for inferior material, may be quoted as being unchanged as follows: Beams, channels and angles, according to specifications, 1.83½c to 2c; refined iron bars, 1.83½c to 1.88½c; steel bars, 1.83½c to 1.88½c; plates, 1.98½c to 2.03½c.

Old Material.—The market is improving steadily, and from nearly all quarters scrap is in good demand, with prices showing an upward tendency. This is especially the case with old rails and car wheels. Prices follow:

Old steel rails	$19.50 to 20.00
No. 1 steel scrap	19.00 to 19.50
Old steel axles	22.50 to 23.00
Old iron axles	31.00 to 32.00
Old iron rails	27.00 to 28.00
Old car wheels	24.00 to 25.00
Choice scrap R. R. No. 1 wrought	20.50 to 21.00
No. 1 yard scrap	18.50 to 19.00
Machinery Scrap	21.50 to 22.00
Low phosphorus scrap	23.50 to 24.00
Wrought iron pipe	16.00 to 17.00
No. 1 forge fire scrap	16.50 to 17.00
No. 2 forge fire scrap, ordinary	11.50 to 12.00
Wrought turnings	17.00 to 17.50
Axle turnings, heavy	17.00 to 17.50
Cast borings	16.25 to 16.75
Stove plates	17.50 to 18.00

NEW YORK.

Pig Iron Not So Active, But Market Strong.—Good Month for Structural Material.

Office of THE IRON TRADE REVIEW.
Room 1005, No. 90 West St., May 28.

Pig Iron.—The current market is one of lessened activity, though of undiminished strength. Consumers are apparently well supplied for the early future and are not so eager for iron as a fortnight ago, but furnaces are so well sold through the year that no lowering of prices can be expected to result. To offset the quiet conditions in prompt and early delivery iron, there is considerable demand for 1908 delivery. One large consumer dependent upon the railways for its custom is in the market for various grades aggregating 15,000 tons for delivery during the first quarter, and will probably close contracts within the next few weeks. When this concern was last in the market, six months ago, its purchases filled requirements for the entire last half of the current year. It is interesting to note in the present instance that, while iron is sought for only a three-months' period, the inquiry is for about 30 per cent more proportionately than has been purchased heretofore. Another inquiry for 10,000 tons for first quarter delivery is reported and 8,000 tons is wanted for the last half of this year. Of the 8,000 tons of foreign iron for which four concerns in the Chicago district were reported in the market last week, about 3,000 tons has been placed. The British market is more quiet and the sharp advance of the past few weeks has apparently ceased, Cleveland warrants holding their own at a price slightly above sixty shillings. Stocks of No. 3 Middlesboro, May 17, were down to 347,000 tons and were decreasing at the rate of 2,000 tons a day. Several cargoes are due to arrive at Atlantic ports early in June, but no unsold iron is due before the last of the month. Tidewater prices are unchanged at $22.00 to $22.50. There has been considerable inquiry of late for malleable and good tonnages have been sold. The selling movement in basic has quieted down, after aggregate sales in the east of perhaps 135,000 tons, but consumers as a rule are only partially covered through the last half and will be forced to enter the market later on. There has been active buying of coke for the last half during the week, with considerable competition among producers for the business.

The first of June will see a revision of freight rates on pig iron in the east, one result of which will be the practical barring of Buffalo iron from the New York district. From Buffalo to New York the advance is to be 20 cents, but

from Buffalo to New Jersey points it will be 70 cents. The effect of this change, however, will not be keenly felt during the remainder of the year, as the output of the Buffalo furnaces is practically all sold. The revision involves no advance from eastern Pennsylvania furnaces to New York and no general advance from the central Pennsylvania furnaces. About 2,000 tons of "off" iron which has been stored at a New Jersey furnace for some time has been disposed of at $19.00, a very good price considering the analysis.

We quote tidewater prices as follows, the higher figures being for prompt shipment:

Northern Foundry No. 1	$24.00 to 26.00
No. 2X Foundry	23.50 to 26.00
No. 2 Plain	23.00 to 25.50
No. 2 Southern Foundry	23.50 to 26.00
Basic	23.00 to 24.50

Ferro-Manganese.—There has been an active market through the past three weeks, one concern having disposed of between 3,000 and 4,000 tons for the last half at between $63 and $64, tidewater. For early June shipment in carload lots $65.00 to $66.00 is asked. Some speculative interests which have sold short in the hope of lower prices are becoming anxious.

Finished Materials.—The month just closing has been productive of an extremely large volume of structural business, a conservative estimate of the total of contracts let being about 200,000 tons. Competition has been very brisk and fabricating concerns all over the country have shared generously. The American Bridge Co. will have about 40,000 tons to report, this including 800 tons for the Gary plant, 1,200 tons for Carnegie Steel improvements, 2,600 tons for a Philadelphia building and 1,400 tons for bridge work on the Atlantic Coast line, these contracts being closed during the past week. The George A. Fuller Co. will erect the Lawyers' Title building in this city for which 2,400 tons of steel will be required. Lewinson & Co. have taken the contract for a studio building in New York and will need about 1,200 tons of steel for the work.

Eastern plate mills are well sold up and current ship, boiler and tank work is furnishing ample business for those concerns catering to early delivery orders on the Pittsburg basis of 1.90c. One large lot was closed recently on the basis of 1.80c, but the demand is strong enough to secure the higher figure. The tendency is for these mills to fill up on orders for the heavier gages. Eastern mills are also well sold on billets and are holding out for good prices, with the result that consumers are covering only for immediate needs and current business is not large. Forging billets are held at $38.00 to $40.00 for prompt shipment and at $37.50 for forward shipment. Rolling billets are quoted at $32.00 to $34.00. One large lot of cast iron pipe for use in New York city is still pending, but no other important business has developed. A sale of 2,000 tons of bar iron at 1.70c Pittsburg is reported.

We quote tidewater prices as follows: Angles, 3 to 6 inches x ¼ inch and heavier, 1.84½c; beams, 3 to 15 inches, 1.84½c; tees, 3 x ¼ and heavier, 1.89½c; plates, carloads, tank, 1.94½c; marine boiler, 2.24½c; bar iron, 1.84½c; soft steel bars, 1.74½c; sheets, No. 28, black, 2.60c.

Old Materials.—The easier conditions usually prevailing toward the close of the month are noticeable, though the market is by no means weakened. Cast scrap is in lighter demand than a week ago, and is off slightly, this being due to the improved delivery of pig iron. Wrought scrap continues without strength and quotations are only nominal. Pipe is not so eagerly sought and railroad malleable is also easier, but with these exceptions conditions show little change during the week. Heavy melting scrap is slightly higher. No large tonnages are reported among current sales, though lots of 500 and 1,000 tons are not uncommon. We quote New York delivery, gross tons, as follows:

Old iron rails	$24.50 to 25.50
Old steel rails, long lengths	18.00 to 18.50
Old steel rails, short pieces	16.25 to 16.75
Relaying rails	28.00 to 29.00
Old car wheels	24.00 to 24.50
Old iron car axles	28.50 to 29.50
Old steel car axles	21.00 to 21.50
Heavy melting steel	16.75 to 17.25
No. 1 railroad wrought	18.00 to 18.50
Iron track scrap	17.00 to 17.50
Wrought pipe	14.50 to 15.00
Cast borings	14.00 to 14.50
Wrought turnings	14.75 to 15.25
Heavy cast scrap	18.75 to 19.25
Railroad malleable	17.00 to 18.00
Agricultural malleable	15.00 to 16.00
Stove plate	15.50 to 16.00
Grate bars	14.50 to 15.00

BUFFALO.

Pig Iron Prices Firm.—Transactions Are Not Numerous.

May 27.

Pig Iron.—The market here is quiet this week with some selling for last quarter delivery at prices quoted. Occasional sales are reported for first quarter, 1908, delivery, most of which average $2 less per ton than sales for delivery during the present year. Prices have undergone no change during the week past.

Quite a strong demand has developed in this district for charcoal iron, but there is little of this grade to be had. Some Superior charcoal has been offered at prices around $28 while southern of the same grade is offered here for $32. The little quoted has been covered, but the demand is greatly in excess of the supply.

Furnaces reiterate the statement that the output for the balance of the year is well covered with only a few holes in the last quarter. For this reason it is expected that there will be something of a quiet time for a few weeks until the 1907 business gets lined up. There have been a few large inquiries for early 1908 deliveries, during the past few days. Evidently some of the larger consumers are trying to get a line on the future, but do not appear to be inclined to contract just at this time. There seems to be less anxiety over the supply for forward deliveries now than there has been for several weeks previous.

The local furnaces have disposed of a few lots of prompt iron, the prices being about $3 advance on No. 2 foundry quotations for last quarter. Plenty of it could be placed here if it were offered. Consumers appear, however, to be less pressed for foundry iron at present and urgent needs have been pretty well taken care of. Prices are firm. We quote for last quarter delivery as follows:

No. 1X Foundry	$23.75 to 24.00
No. 2X Foundry	23.00 to 23.50
No. 3 Foundry	22.75 to 23.00
No. 2 Plain	22.50 to 23.00
Malleable Bessemer	23.00 to 23.50
Gray Forge	22.00 to 22.50
Charcoal	27.00 to 27.50

ST. LOUIS.

Demand for Pig Iron Good.—Limited Stocks on Hand.

May 27.

Pig Iron.—The demand for pig iron is good for both immediate and future shipments, especially for the last quarter. There is no iron to be had for less than $20 Birmingham for the last three months, and sales have been made for the first quarter of 1908 at $18.50. Nearly all of the furnaces are reported to be behind with their contracts. There is a continual demand for spot, also for shipments over next sixty days. Hickman, Williams & Co., of St. Louis, have had a representative in the Birmingham, Nashville, Sheffield and Chattanooga districts since May 21 to ascertain the amount of iron in furnace yards, the condition of order books, etc. He reports not exceeding 10,000 tons of iron in the yards and that of this amount, at least four-fifths will grade gray forge, mottled and white. The furnaces in the districts report their probable make for 1907 sold, and many orders for 1908.

Coke.—The demand for coke is good. Standard 72-hour foundry is quoted at $3.25 to $3.50 Connellsville ovens. The freight to East St. Louis is $2.80 per ton, and to St. Louis, $2.90. The freight

rate on Virginia and West Virginia coke will advance on July 1.

Steel.—It is understood that a contract has been let for the proposed addition to the National Bank of Commerce building, which will occupy a quarter of a block at the northeast corner of Broadway and Pine street, St. Louis, and require about 2,500 tons of steel. The plans have not been completed, however. With this exception, there has been but little stir in the steel market since last report. The architects of St. Louis have a number of steel structures in embryo but nothing definite is ascertainable.

Old Material.—Quotations for scrap iron, f. o. b. St. Louis, are as follows:

	PER TON
Steel rails, less than 3 feet	$17.00 to 17.25
Car wheels	24.00 to 24.50
Iron rails	23.00 to 23.50
Rolling rails	17.50 to 18.00
Heavy melting steel	17.00 to 17.25
Country steel	15.00 to 15.50
No. 1 railroad wrought	16.50 to 17.00
No. 2 railroad wrought	15.50 to 16.00
Shaftings	18.00 to 18.50
Country wrought	14.50 to 14.75
Pipes and flues	12.50 to 12.75
Cast iron	17.00 to 17.25
No. 1 Busheling	13.50 to 13.75
No. 2 Busheling	12.75 to 13.00
Boiler sheets and rings	12.50 to 12.75
Cast and borings	10.00 to 10.25
Turnings	12.75 to 13.00
Railroad malleable	15.50 to 15.75
Agricultural malleable	14.50 to 14.75
Stove plates	14.50 to 14.75
Iron splice bars	17.50 to 18.00

BIRMINGHAM, ALA.

Considerable Buying for Last Quarter and Next Year.

May 27.

Continued activity is to be noticed on all sides in the southern pig iron and steel market. The demand is strong and quite a number of sales are reported recently for delivery during the last quarter of this year and during the first three months in next year. At present rates, the probable make for the two quarters mentioned will soon be provided for and some of the manufacturers at least will shortly be found abstaining from the market. The third quarter iron, this year's delivery, is very scarce, that product being considered almost the same as spot iron. Quotations have not changed any lately, $19.50 and $20 being the prices fixed for the iron to be delivered during the last quarter of 1907, No. 2 foundry basis. Iron men in Birmingham state that conditions never were more favorable than now. The production in Alabama shows no improvement. Local mishaps still play a part in the prevention of efforts to bring about a better output. Fires, explosions in flues, bursting of steam pipes and other accidents are reported frequently.

The ore supply in this state is being improved. Considerable effort is being made in this line and some good results are being noted. The Sloss-Sheffield Steel & Iron Co. is pushing work at brown ore mines. Several new red ore mines are being opened or enlarged in this state.

The Jenifer Iron & Coal Co. has been incorporated in this (Jefferson) county, capital stock $50,000. The old Jenifer furnace and other property will be taken over. The following officers have been chosen by the new company: John M. Thomas, president; J. M. Reibs, vice president and treasurer; Fred Hoffman, secretary. All the officers are from Milwaukee, Wis., and were interested in the old company of a similar name.

Morris W. Bush, assistant to the president of the Alabama Consolidated Coal & Iron Co., has tendered his resignation, effective June 1. Mr. Bush will go with another company. Otto Schultz, assistant treasurer and auditor of the same company, has also tendered his resignation.

BRITISH IRON MARKET.

Heavy Sales in Pig Iron.—Ore in Demand.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., May 18.

The pig iron market maintains extraordinary strength, the one query which concerns British consumers at the present time being how much higher prices are likely to go. Yesterday's quotation for cash at Middlesbrough was 62s ($15.18). This represents a rise of over 9s ($2.20) per ton since the early part of April. This quotation applies to warrants, new iron being: No. 3, 63s ($15.42), No. 1, 67s 6d ($16.52) and No. 4 foundry, 62s 6d ($15.30). Recent sales have been enormous. One day recently, the business aggregated 40,000 tons, and on Saturday last no less than 13,000 tons were sold. The stores are reducing at present time by about 3,200 tons per day. Since the beginning of the month, nearly 40,000 tons have been taken out of store. Yesterday the stocks totalled 361,426 tons. The total shipments this month will be very heavy. There are still great demands from America, and, in some cases, makers decline to commit themselves for early deliveries. The shipments continue to leave of all records far in the rear. A strong demand has set in for hematite with the result that Cumberland brands, which a fortnight ago were 79s 8d ($19.50) are now 82s ($20.80). The west coast hematite stocks which for a long time remained stationary have now experienced a large reduction. To a less extent, the Birmingham district has been influenced by the northern demand, the increase on Thursday last being from 1s to 2s. In some cases Midland buyers were obliged to place orders at higher rates than some they refused to entertain a week before. The weekly cablegram from THE IRON TRADE REVIEW which has appeared in a large number of daily papers in the iron districts, and which has told of growing strength in the pig iron market, has been read with eagerness by traders. Generally speaking, Northampton and Derbyshire brands are quoted at from 59s ($14.44) to 60s ($14.68). Practically, everybody is now taking the opportunity to buy.

METAL MARKET.

NEW YORK.

May 28.

Copper.—The week has developed no strengthening feature, and the market continues exceedingly dull, consumers holding off persistently and producers being unable to stimulate interest. For early shipment prices manifest little change, but for forward account the actual market is now considerably below the nominal price set by the large producing interests. Exports from Atlantic ports during May will be in excess of 8,000 tons. Quotations, which are largely nominal, are as follows: Lake, 24¾c to 25¼c; electrolytic, 23½c to 24c; casting, 22½c to 23c. The foreign market is weak. London closing yesterday at £100 for spot and £98 for futures.

Pig Tin.—After manifesing some improvement, because of the fact that consumers allowed their stocks to run unusually low, the market broke badly abroad on Monday and a sympathetic decline resulted in the domestic market. Better deliveries are now possible, as there is a marked improvement in the local strike situation. We quote for spot, 42c to 43½c; for futures, 41¼c to 42c. Yesterday's close in London was £189 for spot and £184 11s for three months' delivery. May arrivals total about 2,500 tons, with 1,500 tons afloat.

Pig Lead.—The market manifests no appreciable change, continuing at 6c, New York, and 5.90c to 5.95c for Missouri. Soft Spanish closed yesterday in London at £19 17s 6d.

Spelter.—Refined is quoted at 6.20c to 6.40c, according to delivery. The market is without feature. London closed yesterday at £25 7s 6d for G. M. B.

Antimony.—The market is still weaker and we quote: Cookson's, 22c to 22½c, Hallett's, 17½c to 18c and ordinary brands 16½c to 17½c.

CHICAGO.

May 27.

Small sales continued to be the rule in the local metal market during the week. High prices for tin prevailed and little demand was apparent for the metal. Users bought sparingly and

only for their immediate needs hoping for a drop in the price.

Copper lake sold for 26c and casting between 25½c and 26c. Sheet zinc was quoted at 8.60c LaSalle in car lots of 100 pound casks. Spelter sold at 7¼c. Pig tin varied between 45½c and 45¾c. Lead desilverized sold between 6.50c and 6.60c in 50 ton lots and corroding between 7.25c and 7.35c. The price in car lots was 2½c per 100 pounds higher. Cookson's antimony sold for 25c and 25½c and other grades at 24c.

A general drop of ¼ cent on all second metals occurred during the week. Demand was light and trading dull. Buyers prices quoted by dealers were:

Copper wire, 18c to 19c; heavy copper, 18c to 19c; copper bottoms, 18c; copper clips, 18.50c to 19c; red brass, heavy, 18c; yellow brass, heavy, 15c to 15.50c; red brass, borings, 15.50c to 16c; yellow brass borings, 13.50 to 14c; light brass, 12c; zinc, 4.75c to 5c; pipe lead, 5.25c; tea lead, 4.75c to 5c; tin foil, 32c to 33c; pewter No. 1, 28c to 29c.

ST. LOUIS.

May 27.

Lead and Zinc.—Owing to the resumption of purchasing by the Picher and Granby companies, which had been practically out of the market for the last six weeks, the price of lead was advanced at Joplin, Mo., last week from $1 to $2 a ton. Zinc prices were reported unchanged, although the producers were holding out for a higher scale. The shipments of the week were largely from advance purchases made a week or two ago, the car service being better than at any time this year.

Will Confer With Amalgamated.—The Western Bar Iron Association and the Amalgamated Association will meet in conference at the Boody House, Toledo, O., June 4, for the purpose of agreeing upon a scale for 1907-1908. The demands printed in THE IRON TRADE REVIEW last week will be submitted to the manufacturers' conference committee by the representatives of the Amalgamated Association involving advances in nearly all departments.

Duluth Site Selected.—The site for the new plant which will be erected near Duluth by the Minnesota Steel Co., a subsidiary of the United States Steel Corporation, has been selected. It is on the St. Louis river, but the exact location is not announced.

B. H. Rader has been appointed eastern sales agent of the Universal Portland Cement Co., with office in the Frick building, Pittsburg.

EIGHT HOUR DAY

Demanded by Organization of Blast Furnace Workers.

Formal demand for an eight-hour work day for blast furnace employes has been made upon the United States Steel Corporation and several of the other larger interests by the National Association of Blast Furnace Workers & Smelters of America. The furnace workers demand an eight-hour day effective July 1, and the following rate of wages for all men now working 12 hours: Keepers, $3; helpers, $3.50; fillers, $2.50; laborers (nine hours), $1.75, and all other labor in proportion. The demand is a general one and the larger companies of the iron producing industry of the country have been the first to be notified.

A NEW SOUTHERN RECORD.

(Special Telegram.)

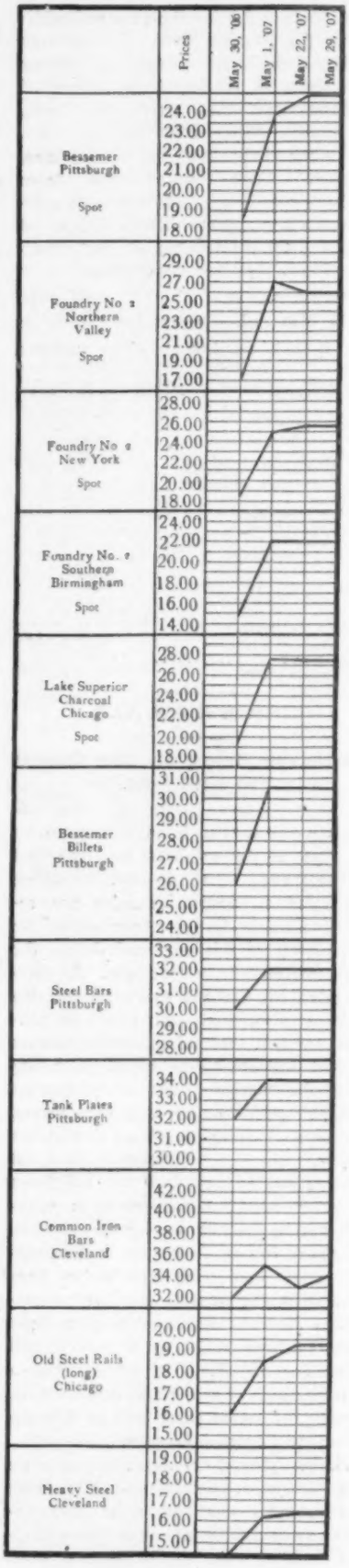
New York, May 28.—No. 4 furnace of the Tennessee Coal, Iron & Railroad Co. at Ensley is being dried out and will be ready to be blown in the first of June. Work on the new stack which replaces an old hand-filled stack was begun slightly less than six months ago, and the completion of the work in this period is a record for construction in the south. The furnace is a Tennessee project throughout, practically every part of it being fabricated in the company's shops and erected by its own mechanics.

MACHINISTS' STRIKE.

The strike of machinists at Cleveland for a nine-hour day and a 10 per cent increase in wages has been inaugurated by several hundred of the men going out at the plants of the Garford Co. and the Long Arm System Co. June 3 is the date set by the machinists for a general strike in case their employers refuse to grant the demand. Both sides are now preparing for a struggle.

Trouble is Adjusted.—The labor troubles at the plant of the Colonial Steel Co., Colona, Pa., near Pittsburg, have been adjusted and the plant is now in complete operation. The strike, which was caused primarily by the discharge of two heads of the operating force and the consequent withdrawal from the plant of all other workmen, has resulted in a change of the entire mechanical force. Contemplated improvements by the Colonial Steel Co. have been held up on account of this trouble, but they will now be put under way and rushed to completion.

PRICE CHART.



HEAVY RAIN

Interferes with Shipments of Ore.—Extensive Drilling Being Done.

Office of THE IRON TRADE REVIEW,
411 Providence Bldg.,
Duluth, May 25.

Heavy rain today has interrupted a good week of shipping from the head of the lakes and the prospect now is that a large fleet will be held here until Monday. From Duluth, Superior and Two Harbors docks up to May 21 the gain in ore shipments over last year amounted to 266,183 tons, the total for this year being 2,887,272 tons. The aggregate shipment last week from the three ports was 976,518 tons, as compared with 717,873 in the same week a year ago. The comparative figures for each port for the week for this year and last are as follows: Duluth, 413,901 tons in 1907 and 292,163 tons in 1905; Two Harbors, 341,859 tons in 1907, 251,092 tons in 1906, and Superior, 220,758 tons in 1907, against 174,618 tons last season.

On the ranges the past week has been very trying in open pit work because of the warm weather, which loosened much of the frost in the ground, making the tracks both in the pits and on the dumps which were laid in the winter very treacherous. In some places ties have sunk out of sight and the rails are not only twisted in fantastic curves but are down to the top flanges in clay. Where muskeg swamps overlying blue clay are encountered, the problem of handling, ordinarily of sufficient difficulty, has been largely increased and large areas of the soft surface slide out into the pits and off the dumps, burying tracks, stalling shovels and derailing engines and dump cars.

A great deal of drilling is being done by both independent interests and the corporation. Two properties near Buhl have been drilled and are on the market, as are also two forties near Hibbing. The White Iron Lake Co. has been exploring near Chisholm and has obtained results sufficiently favorable to warrant further exploration. Around Grand Rapids on the extreme west end of the range, a considerable amount of drilling is being done and while the excitement prevailing generally in that section is somewhat out of proportion to the general occurrence of ore several ore bearing forties have changed hands, land being acquired both by the Oliver Iron Mining Co. and other interests. A record drill camp has been established by the Steel Corporation at Windom in the Coleraine district where it has 43 drills at work proving up the Hill-Walker lands. Such a lay out of drills has never before been witnessed and, with the cost of operating each drill something over $10 a day, the enormous expense of such an exploring camp represents a large preliminary investment.

MACHINERY CLUB OF NEW YORK.

Promoters of the Machinery Club of the city of New York are meeting with splendid success in the work of organization. As reported in the last issue of THE IRON TRADE REVIEW, the club has been incorporated and officers have been elected as follows: President, Frank L. Stillman, of the Watson-Stillman Co.; vice president, R. C. McKinney, of Niles-Bement-Pond Co.; treasurer, Walter L. Pierce, of the Lidgerwood Mfg. Co.; temporary secretary, Theodore Waters, of the Hudson companies. James R. Vandyke, of the Vandyke-Churchill Co. has been made chairman of the membership committee—the other members will be selected later—and T. L. Motley, of T. L. Motley & Co., heads the house committee. A governing committee of twenty members has been selected as follows: To hold office for one year, Oscar Milliken, O. C. Gayley, John W. Dunn, George A. Post and Walter L. Pierce; for two years, F. H. Stillman, Henry C. Hunter, James B. Brady, R. C. McKinney and J. W. Duntley; for three years, T. L. Motley, Henry Prentiss, J. R. Vandyke, John R. McGinley and Otis H. Culter; for five years, A. B. See, W. H. Marshall, Arthur L. Merrian, E. H. Wells and W. L. Saunders. Eventually it is expected that the club will have a membership of about 750, in addition to non-residents.

Adopt Association Name.—When the joint convention of the International Railway and Master Steam Boiler Makers' Associations had closed its sessions at the Hollenden hotel, Cleveland, May 23, a new association into which the two organizations has been merged and known as the International Master Boiler Makers' Association had been brought into existence. This was the name selected following the adoption of a new constitution. George Wagstaff, Cleveland, supervisor of boilers of the New York Central lines, was elected as the association's first president. The matter of urging the drafting of a bill in the several state legislatures, providing for the appointment of a chief boiler inspector and deputy inspectors from the ranks of practical boiler makers, was left in the hands of the committee with full power to act. The next convention will be held in Detroit in May, 1908, the exact date to be fixed by the executive committee.

TARIFF REVISION

Favored and Urged by National Association of Manufacturers.

Immediate revision of a tariff and the appointment of a semi-judicial tariff commission to sit permanently, were requested in the resolutions adopted at the closing sessions of the National Association of Manufacturers at the Waldorf hotel, New York, May 23. The adoption of the policy of revision was accomplished by the acceptance of the report of the committee on tariff and reciprocity, which had formulated its recommendations following a poll of the sentiments of the members of the association.

H. E. Miles, chairman of the committee, declared that of the members, who replied to the inquiry, 350, or 20 per cent, are radically opposed to a revision; 8 per cent are opposed to it at this time on the grounds of expediency, lest it unsettle business conditions; 55 per cent want revision, most of them a radical kind but one-fifth want only a partial change. Taken by industries, out of 77 different kinds of manufactories tabulated, 56 voted for revision, casting a total of 1,510 votes; 16 voted against revision, casting 102 votes, and five industries were each tied in their votes, casting 28 votes. An overwhelming sentiment in favor of a tariff commission, with semi-judicial powers to summon witnesses, and whose duty it shall be to thoroughly investigate the various schedules and from time to time submit recommendations to congress and the president, was decided by the poll.

The association in regard to labor unions declared for "righteous industrial peace," which the manufacturers declared must be based on the principles of the association, the open shop, no boycott, no limitation of the number of apprentices, no limitation of the output, no dictation by the unions as to the manner in which employers shall manage their business and no blacklist. James W. Van Cleave, of St. Louis, was re-elected president of the association, and F. H. Stillman, of New York, treasurer.

Scrap in Panama.—In disposing of the vast quantities of scrap along the line of the Panama canal the government has sold 700 old French dump cars to a Philadelphia firm for $4.15 per ton. It is estimated that each car contains about four tons of scrap. The buyer has to see to the breaking up of the cars and the shipment of the material to the United States. There is an immense quantity of old steel rails, locomotives, machinery and other junk which will be sold later.

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THE FEAR ABROAD OF THE AMERICAN STEEL INDUSTRY.

The annual statistical report of the secretary of the British Iron Trade Association has just appeared. At several points the report discloses a fear that the prosperity now enjoyed in the British trade may not last very much longer. Apparently the secretary has more ideas on the subject of the probable influence of the American steel industry upon the international situation than he cares to express. In the general review he speaks of the "revival of 1905-7;" he says that on the whole it has been more general and sound than any of its predecessors for many years past, and later, he adds:

If there has been, and remains, "a rift within the lute," it is probably due to the uncertain and more or less unusual character of American influences, which have to some extent affected the markets of Europe generally. The present extent of the production of American iron and steel is so enormous that a collapse in the American market, it is believed, would be certain to react almost immediately on the chief markets of Europe. The uncertain character of American tendencies has been repeatedly shown during the past year, and there is no reason to believe that this condition may not again occur.

These well chosen words might have been made still stronger. The American influence is a totally different thing, in its power and scope, from what it ever has been before. In the past revivals and depressions in the United States have in the main occurred as they have abroad, but the movements have been far from absolutely synchronous. In the future it will be different. The United States is making more than twice as much as its leading rival abroad, Germany, and much more than as much as England and Germany combined. In recent years the cost of manufacture may have advanced slightly in the United States, but the chief change has been that values have attached to raw materials in the ground, partly through the operation of natural laws, and partly by man's device, whereby the cost of manufacture is regarded as much higher. That system of accounting, however, has only applied to material for domestic consumption, as the question has not arisen as to world markets, and this is probably what our British cousins fear. Neither they nor we know just how the accounting will be arranged should the period of relative depression occur.

The international alignment is totally changed. It is not so many years ago that the United States consumed but a few million tons of iron and steel a year, while instead of exporting, it was importing in the hundreds of thousands of tons. Depression here had an influence abroad through the curtailments, by hundreds of thousands of tons, of our imports. Now the United States is a twenty-five million ton country, and depressions will mean exports by millions of tons, rather than curtailments, by hundreds of thousands of imports. Our foreign competitors are probably much more fully alive to the possibilities than they admit.

WHERE EXHIBITIONS PAY.

One of the clearly marked tendencies of the recent past in the machine tool industry has been the growing disposition of manufacturers to discontinue the exhibition of their products at the great national expositions held with considerable regularity at the rate of about five per decade. The extent to which this withdrawal policy has been adopted is evidenced by the fact that of the seventy-five concerns holding membership in the National Machine Tool Builders' Association, only one is represented in the hall of machinery and transportation at the Jamestown exposition. Fourteen years ago at Chicago, a considerable proportion of these manufacturers expended large amounts in displaying their machine tools, but since that time each succeeding exposition has seen fewer and fewer exhibits of this sort.

Manufacturers are frank to state the reason for their course. This form of publicity for their products does not pay. The Chicago fair was doubtless more representative of the whole nation than any later effort of its kind and attracted a better attendance, but, except in isolated instances, it was not productive of direct results commensurate with the expense involved and its indirect effect, insofar as it could be traced, was not considerable. In the past decade, the exposition idea has been badly overdone in this country, with the result that interest and attendance have waned. At the same time, advertising methods have improved and facilities have been developed for the accurate tracing of returns until today the promoter of a new exposition project finds his way anything but a path strewn with roses. The manufacturer has found for a trade as highly specialized as that in machine tools the exposition is not a paying proposition.

On the other hand, an excellent instance of profitable exhibition was presented at the recent convention of the American Foundrymen's Association, where a great auditorium and adjoining space were crowded to accommodate the products of some seventy manufacturers and sellers of foundry equipment and supplies. One year ago at Cleveland about half that number availed themselves of the first opportunity offered to exhibit in connection with the foundrymen's convention. Returns were found to be so satisfactory that an association of exhibitors was formed and plans were laid for a more extensive foundry show at the Philadelphia meeting. So great was the interest manifested in this

display that the regular sessions of the convention were in a way overshadowed. The exhibitors found that as a class the visitors were intelligent, well-informed foundrymen, that they came with the idea of availing themselves to the utmost of the opportunities afforded for a comparative study of the newest demonstration and that in many instances they were authorized and ready to make purchases. The convention hall was crowded throughout the week, demonstrators were kept busy and exhibitors went home with ample returns in the ways of live, dependable inquiries and in many instances with a surprising number of direct orders.

In addition, the educational effect of the exposition was highly important. One exhibitor declared "It has advanced the sale of my machines at least five years" and a canvass of all the exhibitors failed to disclose a single instance where returns were not thoroughly satisfactory.

In the contrast between the two places of exhibition there is food for profitable reflection. The general exposition, now badly over-done, is visited only by the pleasure-seeker and at best can give only indifferent returns. But a convention such as that held at Philadelphia, with a large, representative attendance to which the molding machine and the melting furnace, the parting compound and the sand mixer mean something, presents an opportunity that can not be overlooked. And the founding industry is the better for it.

DYNAMIC AND STATIC STRESSES IN STEEL.

A generation ago the little word "steel" was one to conjure with for the seller of a piece of machinery. To say that a certain part was made of steel was to bring forth the idea that it was made of a material set apart and fitted in every way for whatever function it happened the design of the machine called upon it to perform.

In those days the "steel" of common parlance was crucible steel. It is true that even then there was much more steel made by the Bessemer than by the crucible process, but the Bessemer steel went chiefly into rails, and did not enter into everyday life, while very little open-hearth steel was made, and what there was of it was of a special quality, comparable to an extent with crucible steel.

Later the soft or mild steel of today came to replace wrought iron and lost its individuality. Then began a period in which engineers sought to improve the quality of steel. In the work which was blindly laid out they have succeeded well, but in the past few years it has rapidly been becoming more clear that that work was not properly laid out. That work consisted almost wholly, from an engineering standpoint, in increasing the ultimate strength and advancing the elastic limit, against a statically applied load. Now, as a matter of fact, the various services which steel is expected to perform do not, except in comparatively rare instances, consist in the withstanding of a continued and unvarying strain. Steel is usually subject to intermittent stresses, or to vibratory stresses changing in direction as well as in intensity. These impose quite a different duty upon the steel than that to which successful compliance to tension tests indicates that it is fit to perform. Millions upon millions of pieces of steel have been pulled to destruction and the elastic limit, ultimate strength, and reduction of area carefully noted, when the duty to be performed by the steel did not rest upon those elements at all.

It has been well established that there is no measurable proportion between the ability of steel to resist dynamic stresses and its ability to resist static stresses. It is even possible to increase the resistance to static stresses at the expense of resistance to dynamic stresses. The steel may actually be made poorer, as regards the real work which it is intended to perform.

This may not usually be the case, but it is true that the greater part of the steel made must resist dynamic stresses more than static stresses, while the majority of the testing is directly to determine ability to resist static stresses. Were the one quality an index to the other, the case would not be so bad, but this is far from being true.

More than any other one influence, the rise of the automobile has forced home this difference. In the engine the strains are repeated hundreds or even thousands of times per minute. It is necessary that weight be kept down and so resistance to dynamic stresses becomes several times as important as resistance to a static stress.

The principle has been fully mastered by many engineers, and especially by those engaged in automobile construction, but for the rank and file of steel users there is much yet to compass. The automobile leads in directing attention to the fact that tension tests in an ordinary pulling machine afford valuable and very necessary information, but do not afford all the information which is needed to determine the usefulness of steel under many of the duties to which it is put.

The recently exploited metal vanadium possesses rare qualities in this connection. Other alloy metals have powers of increasing the ultimate strength, elastic limit and static ductility, and their abilities in these directions have been carefully studied and are pretty well understood. Vanadium alone imparts in a marked degree to steel the ability to resist oft-repeated stresses, or, in other words, dynamic strength. Other means may be found, but for the present the hope of engineers is in vanadium. Incidentally, vanadium acts in the direction of increasing the influence of other alloy metals in contributing static strength.

The vehicle has done untold service to mankind in teaching lessons which can be applied in far different connections. That interesting poem about the "one hoss shay" has given thousands of young men their first clear conception of the great fundamental principle of nearly all engineering. The bicycle was largely the creator of the seamless steel tube industry which now numbers the bicycle making industry as one of the lesser of its patrons. The automobile has done more than any other one influence to teach emphatically the difference between ability to resist static and ability to resist dynamic stresses.

Iron and steel products have sold at very much higher prices in the past

eight years than they did during the preceding five years. The difference is due in part to the increased plentifulness of that metal by which all other commodities are measured, in part to the abounding prosperity, and in part to the increased value of the raw materials in the ground. The cheapness of gold is permanent and need not be considered, while prosperity is periodic rather than permanent; it is almost wholly in the periods of prosperity that the real work is done, and the increase in the value of raw materials in the ground is largely permanent. An entire reversion to old conditions in this respect is well nigh impossible. So it becomes necessary, in all the uses to which steel is put, to reduce the weight, even at an expense which a decade ago would have been thought too great. Then the solution of the problem of increased strength was largely increased weight; now, and for all the future, it is less so. The automobile goes to a limit, in increasing strength by adding to the cost per pound, which can hardly be exceeded in any important application of steel except that of building flying machines. It is the great pioneer in this direction, and its influence is bound to be felt all along the line.

COKE PLANT PURCHASED.

St. Louis, May 27.—Zack W. Tinker, a wealthy St. Louis brewer, has sold his interests in the extensive coke plant at Howe, I. T., to James Degnan and James McConnell, of Wilburton, I. T. The property was formerly owned by the Mexican Gulf Coal & Transportation Co., and was purchased from that concern by Messrs. Degnan, McConnell and Tinker. The purchase places Messrs. Degnan & McConnell in control of the property, which consists of five leases of 960 acres each at Howe, 100 coke ovens and all of the vast equipment installed in recent years, and fifty coke ovens at Alderson, I. T., and gives them control with their other holdings of the largest mining, coking and merchandise business in the west. The negotiations, which were closed Saturday, May 25, involved an outlay of $250,000, and were conducted by Stuart & Gordon, of South McAlester and Arthur J. Fitzsimmons, of St. Louis.

PUBLIC TRADES SCHOOLS

Authorized by a Law Just Passed by the Legislature of Wisconsin.

(Special Correspondence.)

Milwaukee, Wis., May 25.—Gov. J. O. Davidson has signed the so-called trades school bill. This will transfer the Milwaukee School of Trades from private to public hands, and make it a part of the Milwaukee public school system, thus enabling Milwaukee in the forefront of the cities of the country in this line of educational work.

The movement to place the trade school under public auspices found its inception early in the year when the directors of the Merchants' and Manufacturers' Association felt the need of widening its scope.

The new law provides that any city in the state may establish a trade school and exact a one half mill tax for its maintenance. An auxiliary body that shall serve in an advisory capacity shall be appointed. This will mean that when the local school board has assumed control over the trade school now in existence, its present trustees may continue to serve in an advisory capacity.

The first step, however, to be taken will be some action on the part of the school board to assume control of the trade school now located at the corner of Clinton and Oregon streets. The school owns an equipment which may be estimated at a value of about $10,000. It includes some valuable machinery patterns and tools, as well as a complete set of drawings, blue prints, etc., etc.

The present board of directors consists of Fred W. Sivyer, chairman, Walter Read, Albert J. Lindeman, J. B. Smith, Wm. Geo. Bruce, and M. H. Grossman. Prof. Perry is in charge of the school.

One of the unique phases which grew out of the movement to secure legislative enactment transferring the trade school out of private into public hands, was the unanimity with which the members of the Merchants and Manufacturers' Association and the Socialist members of the legislature worked in the matter.

The new law is a decided step in the direction of industrial education. No state outside of Massachusetts has thus far concerned itself with the subject. The trade schools now conducted in the eastern cities are maintained under private auspices. There are in fact no trade schools in this country conducted in connection with, or as a part of any public school system.

PERSONALS.

R. B. Goodrich, president of the Eagle Tool Co., Cincinnati, has sailed on a short European trip.

R. B. Patton, of South Pittsburg, Tenn., has been made manager of the Central Foundry Co., Vincennes, Ind.

H. J. Steinbreder has been made superintendent of the Sylvan plant of the Republic Iron & Steel Co., at Moline, Ill., succeeding J. J. Worker, resigned.

J. George Hey, who for years was connected with the American Tool Works Co., has resigned to become president of the Cincinnati Pulley Machinery Co., a newly organized concern.

Charles W. Nichols, who recently become manager of the Hill Publishing Co., New York, has purchased an interest in the *Operative Miller* of Chicago and will hereafter devote his attention to that publication.

Charles I. Gibson, formerly assistant superintendent of the Vandergrift, Pa., mill of the American Sheet & Tin Plate Co., has been appointed manager of the Struthers, O., plant of that corporation, succeeding James C. Kearns, resigned.

J. H. Dohner, for a number of years with the National Cash Register Co., Dayton, O., has accepted a position as assistant general superintendent with the National-Acme Mfg. Co., Cleveland.

A. G. Hollingshead, who has been identified for many years with the Standard Railroad Equipment Co., Chicago and St. Louis, has become connected with the sales department of the Ralston Steel Car Co., Columbus, O.

Harry E. Wessling, for a number of years connected with the Dreses Machine Tool Co. and later with the William Powell Co., has been added to the sales organization of the machinery and equipment department of the Cincinnati Iron Store Co., Cincinnati, O.

John F. Lewis has been appointed superintendent of the open-hearth plant of the Carnegie Steel Co.'s works at Duquesne, Pa., succeeding Frank E. Parks, who has resigned to become superintendent of the open-hearth plant of the Colorado Fuel & Iron Co., at Pueblo, Colo.

George Reis has been appointed general manager of the Minnesota Steel Co., which is to be the title of the new plant of the Steel Corporation at Duluth, Minn. Mr. Reis was formerly identified with the management of the Lackawanna Steel Co., and of the steel plant of Milliken Bros., Inc. He will be vice president and general manager of the Minnesota company when it is fully organized.

OBITUARY.

W. C. Matthew, manager of the Ganaoque Spring & Axle Co., Gananoque, Ont., died suddenly May 14, aged 66 years.

Edward Butler Dunbar, member of the firm of Dunbar Bros., manufacturers of springs, Bristol, Conn., died May 9, aged 65.

William W. Gibbs, vice president and general manager of the Shenandoah Steel Wire Co., Buffalo, New York, died suddenly at West Seneca, New York, May 14, from heart disease. His age was 54.

Francis Ludlow Clark, consulting engineer of the Westinghouse Air Brake Co., and for more than 25 years connected with the Air Brake plant as chief draughtsman and mechanical engineer, died of paralysis at the home of his son, Horace L. S. Clark, in Los Angeles, May 26. He was 62 years old.

Joseph H. Berry, a prominent manufacturer of Detroit, died at his home near that city after a brief illness, aged 68. He possessed extensive interests in many states and a few weeks ago he centralized some of his most important holdings in northern Michigan and Wisconsin, in the corporation of the Lake Superior Iron & Chemical Co., of which he was elected president. His death was unexpected. Although he had been confined to his home on account of an accident which had resulted in the breaking of his ankle, his condition was not thought to be serious.

John A. Walker, vice president and treasurer of the Joseph Dixon Crucible Co., died at his home, Jersey City, N. J., on May 23. Mr. Walker was born in the city of New York, Sept. 22, 1837. He received his early education in the schools of Brooklyn, and, although prepared for college in a private school, chose commercial life. After an excellent business training in the city of New York, and after serving his country in the civil war, Mr. Walker in 1867 became connected with the firm of Joseph Dixon & Co., of Jersey City. In 1868, when the firm became incorporated as the Joseph Dixon Crucible Co., he was made secretary and began his life work in making known to the world the many uses of the then but little known form of carbon,—graphite. Mr. Walker served the Dixon Co. as secretary and largely as manager until 1891, when he was unanimously elected to the dual position of vice president and treasurer, the latter office having been held by him for some time previous. He held these offices without interruption until his death, the general management of the company also being largely in his hands. Untiring and persistent devotion to business, however, with increasing age and lack of needed rest and recreation, began to tell on his vigor and strength, and on April 24 he went home for what he and his intimates supposed would be a few days' rest. Complications set in and a month later he died.

Despite his heavy duties as vice president and treasurer of his company, Mr. Walker found time to devote his energies to outside interests and he was responsibly connected with life insurance companies, trust companies, charitable, social and business organizations. He had held public positions of trust in his

JOHN A. WALKER.

home city. Whether as public official or officer of any institution, or member of any club, Mr. Walker was always prominent and was always successful.

John Wilmer Leonard, assistant manager of the National Supply Co., Pittsburg, died suddenly at Chatham, Ont., early Sunday morning, May 26, from acute Bright's disease. Mr. Leonard, who, together with a large number of Pittsburgers, was interested in the development of a new oil field near Chatham was on an inspection trip at the time he was taken ill. He had been in the oil business practically all his life, and for the past seven years had charge of the pipe business of the National Supply Co. He was 39 years old, was a 32nd degree Mason, a member of the Parker Blue Lodge, Pittsburg Chapter, Duquesne Commandery and Pittsburg Consistory, a Shriner and a member of the Syria Temple, as well as a member of the Duquesne Club, Pittsburg. He is survived by a widow and one daughter.

Col. Geo. N. Gray, intimately connected with the iron industry of the Hanging Rock district, died at his home at Ironton, O., May 17, aged 69. Death resulted after an illness of long duration. Born in Pennsylvania, Col. Gray settled in Ohio at the age of 18, where the call for volunteers took him to the front in the civil war. After that conflict, he first became interested in the iron business as a clerk at the Mt. Vernon furnace, and later in a similar position at the Hecla furnace, Ironton. Successively he formed partnerships to operate Hecla and Vesuvius furnaces at Ironton. At various times he was also connected with the Timmimont furnace in West Virginia and the Rockrun furnace in Alabama. In recent years, his attention had been centered in the large landed interests of the Oronton Coal & Iron Co. and in managing his private affairs. Col. Gray was regarded as one of the best posted and most skillful manufacturers of cold blast charcoal iron in the Hanging Rock district.

Eugene B. Willard Jr., who lost his life May 21 by the explosion at the No. 1 Eliza furnace of the Jones & Laughlin Steel Co., Pittsburg, came from iron-making parentage. His great grandfather, Uri Seeley, made iron from bog ores at Arcole furnace in Lake county, O., in 1823, nearly the entire product of the furnace being made into hollow-ware. His grandfather, James O. Willard, left New Hampshire in 1834, and secured employment at Geauga furnace, near Painesville, Lake county, O. The product of this furnace was made into stoves and hollow-ware. James O. Willard went to the Hanging Rock iron region in 1838 and in a few years became principal owner of Buckhorn furnace and one of the prominent iron masters of that region. He died in 1855. In 1868, Eugene B. Willard Sr., after three years' service in the 91st Ohio regiment, entered the employment of Means, Kyle & Co., the proprietors of Pine Grove and Ohio charcoal furnaces, and later the Hamilton Coke furnace, continuing with the latter company until 1902. Eugene B. Willard Jr., was born at Hanging Rock in 1874. After graduating in 1894 with honor at the Pennsylvania Military college as a civil engineer, he was employed at Hamilton furnace, Hanging Rock, O., three years. He then took a two-year course in chemistry and metallurgy at the Case School of Applied Science, Cleveland, after which he returned to Hamilton furnace and managed it with marked ability and success for eighteen months. He next went to Chicago, and was employed almost two years while the No. 2 Iroquois furnace was being built and put in operation. He then took charge of the three stacks of the Wellston Iron & Steel Co., Wellston, O., and managed them with great success and credit for four years. In July, 1906, he took the position of assistant to the general superintendent of the Eliza furnaces, where he made a brilliant record as a furnaceman and achieved an enviable reputation as a man. His death closes a life and a career of promise and usefulness.

CONVENTION OF THE AMERICAN FOUNDRYMEN'S ASSOCIATION.

RECORD BREAKING ATTENDANCE AND MUCH ENTHUSIASM.

Elaborate Display of Equipment and Supplies.—American Brass Founders' Association Organized.—Entertainments for Members and Ladies.—Visits to Many Plants.

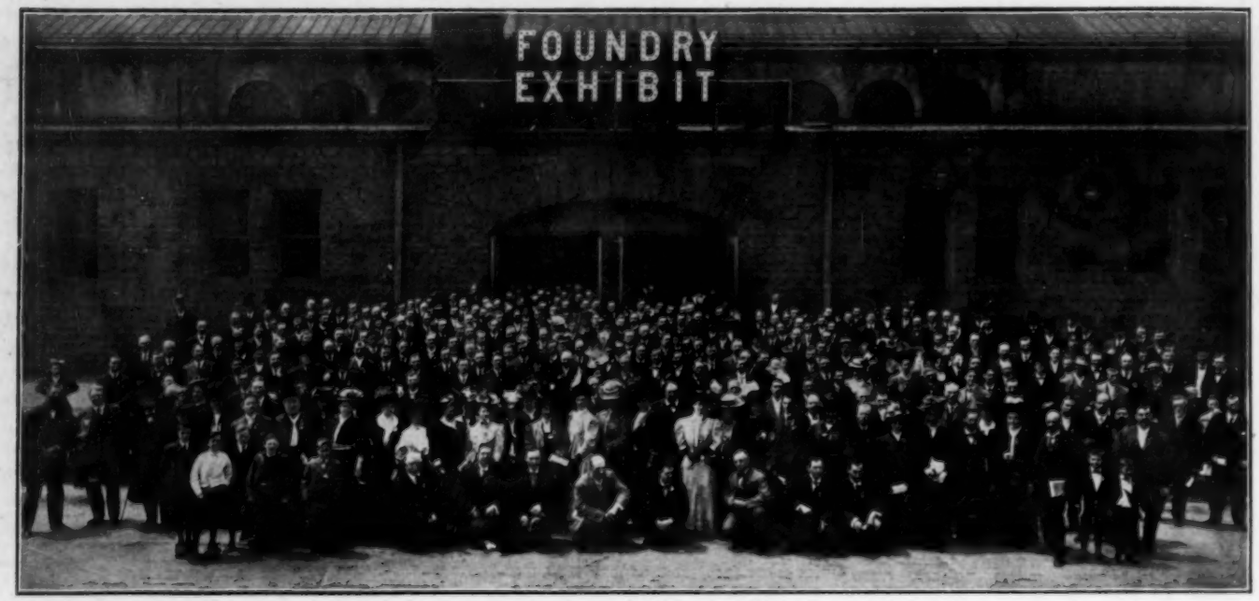
The interest manifested in the annual convention of the American Foundrymen's Association held in Philadelphia, May 21 to 24, reflected the rapid advancement of the foundry trade since the formation of this organization eleven years ago and the attendance, which reached a total of 1,391, was a glowing tribute not only to the birthplace of the association but to those who labored unceasingly for the success of the meeting. The parent body, which now fosters the Associated Foundry Foremen and the Foundry Supply Association, was instrumental in effecting an organization of those affiliated with the brass industry, and although this branch has an enrolment of only 28, the indications are that it will prove one of the most active and largest in point of membership allied with the American Foundrymen's Association.

The papers presented, both in number and interest, surpassed those prepared for previous meetings, and covered live topics of interest to all branches of the foundry trade. Owing to the elaborate entertainment program and the lively interest manifested in the displays, the discussions were limited, but it is probable that at future gatherings more time will be allotted the proceedings.

The convention hall proved none too large for the exhibits of foundry supplies and equipment, which overflowed into a tent erected in an adjoining lot. Both the number and the variety of the displays surpassed all previous attempts and as an educational feature proved of paramount interest. Molding machines, sand conveyors and brass furnaces were shown in operation and practical demonstrations were made of the uses of various lines of foundry supplies. This feature attracted a large number of foremen and superintendents, several large concerns having been represented by the heads of all their various departments. Canadian foundrymen were in evidence to the number of more than 100 and practically every state in the union was represented. Other organizations also held meetings during the week, as this event afforded unusual opportunities for gatherings of associations representing the various branches of the foundry industry.

At the Wednesday afternoon session of the convention a number of papers of timely interest and importance were presented and briefly discussed. The exhibits in the exposition hall adjoining the convention room attracted the majority of visitors, however, and the attendance at the session was only fairly large. W. W. McCarter, of Marietta, Ga., spoke briefly on "Some Facts Concerning Trade Schools," confining himself to an outline of the leading points contained in his paper dealing with this phase of educational work. Following this the paper prepared by John H. Shaw, of New Haven, Conn., on "Sandless Castings" was read, a number of molds being exhibited to illustrate the new features developed by the author.

T. Coggershall, superintendent of the mechanical school of Girard College, told of the work in foundry, blacksmith and allied lines at that institution and extended an invitation to the convention to make an inspection of the college. About a score of boys in attendance there were present and occupied seats at the front of the hall while Mr. Coggershall spoke. "The



MEMBERS AND VISITORS AT A. F. A. CONVENTION.

Training in Foundry Work at Pratt Institute" was outlined by Prof. Wm. C. Stimpson, of Brookyn, lantern slides being used to make clear the methods there employed. The subject of industrial training was further considered by E. A. Johnston, of the Winona Technical School at Indianapolis, who showed several castings made by the students and explained the work at this well known institution.

One of the topics of chief interest brought before the convention was that of "Uniform Cost Accounts for Jobbing Foundries, as Recommended by the Jobbing Founders' Association." In the absence of H. D. Miles, of Buffalo, this report was made by J. S. Stirling. A variety of blank forms was presented. Following this a large number

STANLEY G. FLAGG JR.
President American Foundrymen's Association.

of interesting views illustrating industrial betterment work were shown by H. J. F. Porter, of New York. The session was concluded by E. Ronceray, of Paris, France, who explained his universal system of molding machines and new method of preparing molding sand. Extremely satisfactory cinematograph views made clear many points in this interesting discussion.

Great Crowd at Armory.

Wednesday evening was given over to a general inspection of the exhibits of the Foundry Supply Association, and the big armory which served as an exhibition hall was thronged with visitors. While there were many ladies and local visitors in the hall on this occasion, comment was general among the exhibitors on the keen interest manifested in the machines and equipment shown. Demonstrators were kept busy throughout the evening and the hall was crowded until a late hour.

Final Business Meeting.

Because of an accident suffered by President McFadden the evening before, the chair was occupied during the Thursday morning session by Vice President C. J. Caley. Following up the extensive discussion of that subject on the previous day, Dr. Moldenke moved that a committee be appointed to take up the question of closer relations between trade schools and shops. The announcement of the personnel of this committee was withheld until later. But one technical paper was presented at this session. Alfred Sang, of Pittsburg, gave a brief outline of his interesting paper on "The Art of Galvanizing," after which the clearing away of a few minor details left the election of officers and the selection of a meeting place in 1908 the only task before the convention.

The New Officers.

The report of the nominating committee was presented by J. S. Seaman, of Pittsburg. Its recommendations, which were enthusiastically adopted, provided for the following official staff for the ensuing year:

President, Stanley G. Flagg Jr., Philadelphia.

Vice presidents, First district, C. J. Caley, New Britain, Conn.; Second, John W. Burr, Brooklyn; Third, H. E. Field, Pittsburg; Fourth, J. H. Whiting, Chicago; Fifth, A. K. Beckwith, Dowagiac, Mich.; Sixth, T. W. Sheriffs, Milwaukee; Seventh, J. P. Golden, Columbus, Ga.; Eighth, L. L. Anthes, Toronto, Can.

Secretary-treasurer, Dr. Richard Moldenke, Watchung, N. J.

On motion of Mr. Seaman, a vote of thanks was tendered the retiring president, Mr. McFadden, and he was elected an honorary member of the association. Dr. Moldenke was likewise honored, and the appreciation of the convention was expressed to the Philadelphia Foundrymen's Association, the entertainment committee, the Foundry Supply Association, the readers of papers and all others who helped in making the event of so successful a nature.

The Next Meeting Place.

When the question of the next meeting place was brought up, Dr. Moldenke told of the plan pursued by the association in shaping its affairs so that the place or at least the locality of meeting two years ahead is always kept in mind. He stated that an official invitation had been received to hold the 1908 gathering at Toronto, Ontario, with the probability that a year later the association would meet in Cincinnati or some other convenient point in the central states. The Toronto invitation he favored accepting because of its influence in bringing the foundry interests of two nations closer together. The invitation of Toronto was then formally presented by L. L. Anthes in a vigorous talk on the growth of the association among the Canadian brethren. Two years ago, he said, but one foundryman from the Dominion visited the convention; last year there were a dozen; at the present convention, a hundred Canadians were among the visitors. "Next year at Toronto we will have six hundred." Mr. Anthes said he had been delegated by the mayor and corporation of the city as well as by many associations to urge the acceptance of Toronto as the next meeting place. The conven-

E. H. MUMFORD,
President Foundry Supply Association.

tion was apparently well pleased with the idea of meeting there, but the question of whether or not the selection of a city outside the borders would work to the detriment of exhibitors because of custom regulations was brought up and caused considerable discussion. Mr. Anthes explained that he had a letter from the minister of customs stating that all exhibits would be admitted under bond and that the exhibition hall would be made a bonded warehouse, thus removing this source of difficulty. The suggestion was made that the exhibition be held separately, at some such point as Niagara Falls and that at the close of the regular sessions, the convention adjourn to spend a day or two at this place. The invitation of Niagara Falls was formally presented, but vigorous opposition devoloped against any plan entailing the separation of the convention meeting place and the exhibition hall and the matter was finally referred to the executive committee for definite action.

Brass Founders Organize.

At a meeting held in the convention hall Thursday morning, final action was taken in forming a separate organization of the brass founders and workers in other alloys. A brief constitution was adopted, with the understanding that it would be amplified and altered in such manner as the experience of the organization during the coming year should indicate as necessary. The organization is to be known as the American Brass Founders' Association. Several other names were suggested, among them the Alloys Founders' Association, and the American Brass and Bronze Founders' Association, but the name originally hit upon was decided to be sufficiently comprehensive, though the new association is to be wide in scope and to include workers in the various alloys. The committee on nominations was composed of Palmer H. Langdon, New York, editor the *Metal Industry;* W. R. Webster, general superintendent the Bridgeport Brass Co., Bridgeport, Conn.; R. Marshall, editor *Copper and Brass,* Detroit; A. A. Miller, the *Iron Age,* Philadelphia; Charles H. Proctor, the F. H. Lovell Co., Arlington, N. J.; and J. F. Webb, Elkhart, Ind. Its nominations, which were accepted without change, were as follows:

President, Charles J. Caley, Russell & Erwin Mfg. Co., New Britain, Conn.

Secretary, Andrew M. Fairlie, Tennessee Copper Co., Copper Hill, Tenn.

Treasurer, J. H. Sheeler, the Sheeler-Hemsher Co., Philadelphia.

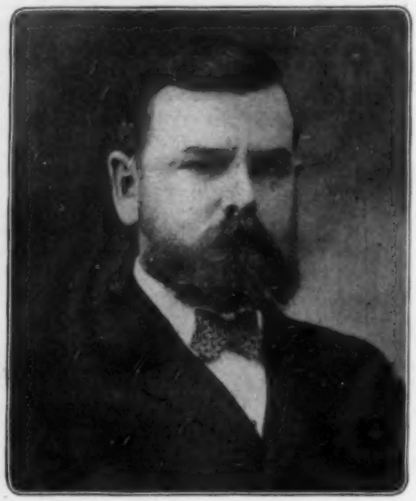
Vice presidents: For New England, W. R. Webster, Bridgeport Brass Co., Bridgeport, Conn., and W. S. Allen, Yale & Towne Mfg. Co., Stamford, Conn.; for New York and New Jersey, A. Bate, general superintendent Nathan Mfg. Co., New York City; Pennsylvania, Delaware, and Maryland, G. W. Wright, Reading Hardware Co., Reading, Pa.; central states, Wm. M. Corse, Detroit Lubricator Co., Detroit; western states, J. N. Gamble, general superintendent Western Tube Co., Kewanee, Ill.; southern states, Edro Richardson, the Edro Richardson Brass Co., Baltimore; Canada, left unfilled.

Brief remarks on the new association were made by Mr. Caley, Mr. Fairlie and Mr. Sheeler, and a number of applications for membership were taken. It was stated that the next meeting would be held at the same time and place as the American Foundrymen's Association, and the meeting was adjourned after voicing its thanks to Dr. Moldenke for his assistance in the work of organization.

Foundry Supply Association.

At the annual meeting of the Foundry Supply Association, held in the assembly room of the Armory on Friday morning, May 24, reports were presented by Secretary H. M. Lane and J. S. McCormick, treasurer. While all of the bills had not yet been presented, the financial statement showed a comfortable balance in the treasury, which the association will carry over into next year. The increase in the membership during the year was remarkable, 99 concerns now being enrolled. For his untiring efforts in behalf of the association, Secretary H. M. Lane was tendered a hearty vote of thanks and his salary was increased from $500 to $1,000 a year.

The nominating committee, consisting



C. J. CALEY,
President American Brass Founders' Assn.

of T. E. Malone, H. Y. Seidel, E. J. Woodison, C. S. MacNeal and A. O. Backert, then presented its report, and the following officers were unanimously elected: E. H. Mumford, the E. H. Mumford Co., Philadelphia, president; W. P. Shepard, Rogers, Brown & Co., Buffalo, first vice president; W. S. Quigley, Rockwell Engineering Co., New York, second vice president; H. R. Atwater, Osborn Mfg. Co., Cleveland, third vice president; William Chambers, Garden City Sand Co., Chicago, fourth vice president; H. M. Lane, Cleveland, secretary, and J. S. McCormick, J. S. McCormick Co., Pittsburg, treasurer. U. E. Kanavel, Interstate Sand Co., Cleveland, and E. J. Woodison, Detroit Foundry Supply Co., Detroit, were elected trustees to replace the two trustees whose terms expired with this meeting. The number of trustees was also increased from six to nine, and W. J. Hamilton, Hamilton Facing Mill Co., Hamilton, Ont., was elected to a three-year term and F. W. Perkins, Arcade Mfg. Co., Freeport, Ill., and George Rayner, Carborundum Co., Niagara Falls, N. Y., were elected for two years.

The question of permitting manufacturers and supply dealers not members of the association to distribute printed matter and souvenirs in the convention hall was discussed at some length and it was decided to leave this matter entirely in the hands of the secretary. Other details, including the charging of a nominal admission fee to those not members of the American Foundrymen's Association and the allied organizations were also considered and left in the hands of the executive committee.

Representatives of the cities of Toronto and Niagara Falls extended invitations to the association to meet next year in their respective cities. The use of a hall at Niagara Falls absolutely free of charge was offered the association and a similar proposition was made by the city of Toronto. Inasmuch as the American Foundrymen's Association, selects the place of meeting, no action was taken beyond thanking the two cities for their kind invitations.

Entertainments and Visits.

The entertainment features were carried out on an elaborate scale and in addition to the smoker on Tuesday evening included a river trip on Wednesday afternoon to Washington park, where a shad dinner was served. A stop was made at the Otto Hoffman by-product coke plant of the Camden Coke Co., and an opportunity was afforded the visitors to inspect the works. A number of the members joined the ladies on a trip to Atlantic City on this day. Many of the visitors also availed themselves of the opportunity afforded to visit a number of plants in the city of Philadelphia. That a large number might be interested, plants were chosen doing a variety of work. For those desiring to visit foundries making a specialty of pipe and heavy machinery, the Camden Iron Works, Camden, N. J., was chosen. The engineering laboratory of the University of Pennsylvania was also visited by a large crowd. Another party inspected the malleable foundry of the Thos. Devlin Mfg. Co., at Burlington, N. J., and for those interested in steel casting a trip was made to the plant of the Seaboard Steel Casting Co., at Chester, Pa. For those interested in the manufacture of crucibles, the plant of the R. B. Seidel Co. was selected, and the Eynon-Evans Mfg. Co. was chosen for brass castings; heavy machinery, Wm. Sellers & Co.; foundry supplies, J. W. Paxson Co.; stove plate, Abram Cox Stove Co.; light hardware, Enterprise Mfg. Co.

Courtesies to Ladies.

The entertainment features for the visiting ladies were planned and included a visit to the exhibit of the Foundry

Supply Association and the opening session of the American Foundrymen's Association at the Second Regiment Armory, on Tuesday morning, and a theater party in the evening. On Wednesday afternoon, the party was taken on a drive through the parks and many stops were made at places of historical interest. On Thursday the ladies were taken on a trip to Atlantic City. The headquarters for the visiting ladies was maintained at the Bellevue-Stratford hotel, where a secretary was in constant attndance during the convention. The committee in charge of this feature included Cyrus Borgner, chairman; Alex. E. Outerbridge Jr., W. H. Ridgway, Edgar S. Cook and Geo. C. Davies, together with the following ladies: Mrs. John Q. Adams, presiding; Mrs. Charles W. Ashbury, Mrs. Cyrus Borgner, Miss Marie Borgner, Mrs. Edgar S. Cook, Mrs. Edward B. Cook, Marie Borgner, Mrs. Edgar S. Cook, Mrs. George C. Davies, Mrs. Thomas Devlin, Mrs. Frederick M. Devlin, Mrs. Walter E. Devlin, Mrs. T. F. Devlin, Mrs. Howard Evans, Mrs. Stanley G. Flagg Jr., Mrs. William S. Hallowell, Mrs. Frank Krug Jr., Mrs. August A. Miller, Mrs. E. H. Mumford, Mrs. Alex. E. Outerbridge Jr., Mrs. W. H. Ridgway, Mrs. J. H. Sheeler, Mrs. William O. Steele, Mrs. Josiah Thompson, Mrs. Harry L. Tripple, Mrs. A. T. William.

MANY ATTRACTIVE EXHIBITS.

From early Monday morning until Friday night the Second Regiment Armory, Philadelphia, was converted into a model foundry, where practical demonstrations were made of the most modern appliances for foundry work. Molds of the most intricate sections were made on power machines and cores were dried in ovens installed in the armory.

Two large sand conveyors and mixers were shown in operation and the exhibits of sand shakers included types both air and electrically driven. Heavy power machines and brass furnaces were operated in a tent erected in a lot adjoining the armory and the display of French machines made by Ph. Bonvillain & E. Ronceray, Paris, attracted unusual attention. The exhibitors were unanimous in proclaiming this feature a pronounced success, many of them having sold sufficient equipment to more than defray their expenses. One builder of molding machines reported sales aggregating $6,000, while another manufacturer of foundry equipment disposed of three large cupolas. In the line of smaller supplies, the sales were heavy and the indications are that the next show of the Foundry Supply Association will be on a larger scale than heretofore attempted. Including the displays grouped in the various booths more than 70 concerns were represented, as follows:

ARCADE MFG. CO., Freeport, Ill.—Molding machines equipped with different styles of pattern plates which showed the different lines of work that the machines will handle successfully.

BERKSHIRE MFG. CO., Cleveland.—Two standard size Berkshire molding machines shown in operation.

BONVILLAIN, PH., & E. RONCERAY, Paris, France.—Complete line of molding machines in operation.

BORGNER, CYRUS, Philadelphia.—Display of fire brick, clay retorts and foundry supplies.

BROWN, EDWARD, & SON, Philadelphia.—Pyrometers.

BUCH'S SONS CO., A., Elizabethtown, Pa.—Gravity molding machines.

CAMDEN COKE CO., Philadelphia.—By-product coke.

CHICAGO PNEUMATIC TOOL CO., Chicago.—Pneumatic rammers, chippers, sand shakers, hammers, etc.

DIAMOND CLAMP & FLASK CO., Richmond, Ind.—Coremaking machines.

DIXON CRUCIBLE CO., JOS., Jersey City.—Crucible retorts of all sizes. Old crucibles that have made from 60 to 80 heats were also shown.

General View of Exhibits at the Armory.

CLEVELAND WIRE SPRING CO., Cleveland.—Foundry barrels and steel foundry boxes.

CORTLAND CORUNDUM WHEEL CO., Cortland, N. Y.—Corundum grinding wheels and motor driven grinders.

DETROIT FOUNDRY SUPPLY CO., Detroit.—Cupola and foundry supplies.

DOGGETT, STANLEY, New York.—Perfection parting compound.

DRUCKLIEB, C., New York.—Sand blast apparatus.

ETTING, EDWARD J., Philadelphia.—Cupolas, tumbling barrels, ladles, and the Dings magnetic separator.

FALLS RIVET & MACHINE CO., Cuyahoga Falls, O.—Two Wads-

worth improved core ovens, coremaking machines and gagger mold.

FOX MACHINE CO., Grand Rapids, Mich.—Full line of pattern shop equipment.

FOUNDRY SPECIALTY CO., Cincinnati.—Parting compounds.

GARDEN CITY SAND CO., Chicago.—Samples of a complete line of molding sand.

GOLDSCHMIDT THERMIT CO., New York.—Demonstrations of the use of thermit for welding purposes.

GUNN, RICHARDS & CO., New York.—Production engineers and public accountants.

HANNA ENGINEERING WKS., Chicago.—Pneumatic and electric sand shakers, riveters, etc.

HARRINGTON, EDWARD, SON & CO., Philadelphia.—Peerless hoists.

HAWLEY DOWN DRAFT FURNACE CO., Chicago.—Metal melting and refining furnaces.

HERMAN PNEUMATIC MACHINE CO., Zelienople, Pa.—Molding machines of three different types shown in operation.

HOERMANN, A. E., New York.—Sand blast machines.

HOLLAND LINSEED OIL CO., Chicago.—Linseed oil and core compounds.

KILLING MOLDING MACHINE CO., Davenport, Ia.—Molding machines, including those of the stripping plate, rock-over, roll-over and roll-out types.

KOPPEL CO., ARTHUR, New York.—Industrial railway system, turntables and cars.

LINDSAY, W. W., & CO., Philadelphia.—Foundry chaplets and anchors.

LINK-BELT CO., Nicetown, Philadelphia.—Sand handling plant shown in operation.

MACPHAIL FLASK & MACHINE CO., Chicago.—Steel flasks and new type of galvanized sheet steel bottom board.

MILLS, C. E., OIL CO., Syracuse, N. Y.—Core oil.

MONARCH EMERY & CORUNDUM WHEEL CO., Camden, N. J.—Full line of emery and corundum wheels.

MONARCH ENGINEERING & MFG. CO., Baltimore.—Tilting furnace, Monarch blower, ladle heater and soft metal melting pots.

MUMFORD, E. H., CO., Philadelphia.—Complete line of molding machines and screening apparatus.

M'CORMICK, J. S., CO., Pittsburg.—Reid molding machine; Webb power molding machine; sand mixers; adjustable crucible tongs, etc.

NORTHERN ENGINEERING WORKS, Detroit.—Cranes, cupolas, and other foundry equipment.

OBERMAYER CO., S., Cincinnati.—Booth furnished with chairs, desks, etc., for the use of the patrons and friends of this concern.

OLIVER MACHINERY CO., Grand Rapids, Mich.—Pattern shop machinery.

OSBORN MFG. CO., Cleveland.—Complete line of foundry and factory supplies, including shovels, riddles, wire brushes, heavy foundry brooms and other miscellaneous supplies.

PANGBORN, THOS. W., CO., New York.—Foundry equipment, including sand blast machinery, core machines, sand sifters, etc.

PAXSON, J. W., CO., Philadelphia.—Section 1 contained the office of the exhibit and was provided with telephones, stenographers, stationery and other conveniences for the comfort of its patrons. Section 2, molding machines in operation, sand sifting machines, centrifugal sand mixers, etc. Section 3, sieves, bellows, and brushes were made in this sub-division. Section 4 contained displays of various types of brass melting furnaces, sprue cutters, skin drying stoves, etc. The center of this exhibit contained a Paxson-Colliau cupola, and a Wilbraham-Green blower was also shown in operation.

PETTINOS BROS., Bethlehem, Pa.—Flake graphites, foundry dust, blackings, etc.

PRIDMORE, HENRY E., Chicago.—Rock-over and stripping plate machines.

PRIMOS CHEMICAL CO., Primos, Delaware county, Pa.—Displays of foundry alloys.

RANDALL TRAMRAIL CO., Philadelphia.—Moyer tramrail system in operation.

RENDLE, ARTHUR E., New York.—Paradigm skylights and fireproof windows.

ROBESON PROCESS CO., Camden, N. J.—Display consisted of barrels of gfutrin manufactured by this company.

ROCKWELL ENGINEERING CO., New York.—Double chamber melting furnaces were shown in operation in the tent.

ROOTS, P. H. & F. M., CO., Connersville, Ind.—Foundry blowers in operation.

SEIDEL, R. B., INC., Philadelphia.—Full line of crucibles and special shapes manufactured by this company.

SLY, W. W. MFG. CO., Cleveland.—Tumbling barrels, cinder mills, dust arresters, core sand separators and other foundry equipment.

SMITH, J. D., FOUNDRY SUPPLY CO., Cleveland.—Sprue cutter, tumbling barrels, core ovens, riddling machines and iron and brass foundry equipment.

SMYTH, SWOBODA & CO., New York.—Parting compound.

STANDARD SAND & MACHINE CO., Cleveland.—Standard continuous automatic sand mixing machine shown in operation.

STURTEVANT, B. F., CO., Hyde Park, Mass.—High pressure rotary type blower driven by a Sturtevant electric motor.

TABOR MFG. CO., Philadelphia.—Full line of molding machines and Taylor-Newbold saws.

U. S. GRAPHITE CO., Philadelphia.—Graphite products.

WESTERN FOUNDRY SUPPLY CO., E. St. Louis, Ill.—Lump ferro-manganese, ferro-silicon, ferro-chrome, ferro-nickel, oxide of chromium, oxide of manganese, and foundry facings.

WHITING FOUNDRY EQUIPMENT CO., Harvey, Ill.—Space furnished with tables, chairs, desk, etc., for the convenience of its patrons.

YALE & TOWNE MFG. CO., New York.—Portable electric hoists.

THE IRON INDUSTRY OF AUSTRALIA.

Consul-General John P. Bray reports the formation in Melbourne of two companies, one with a capital of over $2,500,000 for the manufacture of iron and steel in Australia. One company is to operate at Lithgow, in the state of New South Wales, where large deposits of iron ore, together with coal and limestone are said to exist; the other is to be located near Melbourne, the ore being brought from the Tamar river, Tasmania. In both cases, large modern plants are to be erected. These companies are the first serious attempts to establish the iron industry in Australia.

JURY FAILED TO AGREE.

After deliberating for more than 25 hours, the jury in the case of Supt. J. J. Dunn and Asst. Supt. Charles L. Close, of the Shelby Steel Tube Co.'s plant, at Greenville, Pa., charged with conspiracy against the government reported to Judge Nathaniel Ewing in the United States court at Pittsburg, May 16, that it was unable to agree and accordingly it was discharged. The defendants stood charged of conspiracy to defraud the government by supplying alleged defective and untested boiler tubes for use in vessels of the American navy.

THE WHEELING MOLD AND FOUNDRY CO.

A WELL-EQUIPPED PLANT FOR THE MANUFACTURE OF HEAVY MACHINERY.

Unique Ideas in the Foundry.—Original Methods in Machine Work.—Casting and Machining of Difficult Sections.

The plant of the Wheeling Mold & Foundry Co., Wheeling, W. Va., presents a number of features of interest from the standpoint of both the foundryman and the machinist. The product of this company comprises blooming mills, roll mills, bar mills, sheet and tin plate mills, roll lathes, heavy shears, tables and general mill equipment. Chilled and sand rolls are largely manufactured. In addition to the foregoing, the company, two or three years ago, secured a contract for furnishing 60,000 tons of sections for the tunnels which the Pennsylvania railroad is driving under the North and East rivers in New York City. The manufacture of these sections presents many novel and interesting features, and will be gone into at a greater length below. The company is especially equipped for handling large work.

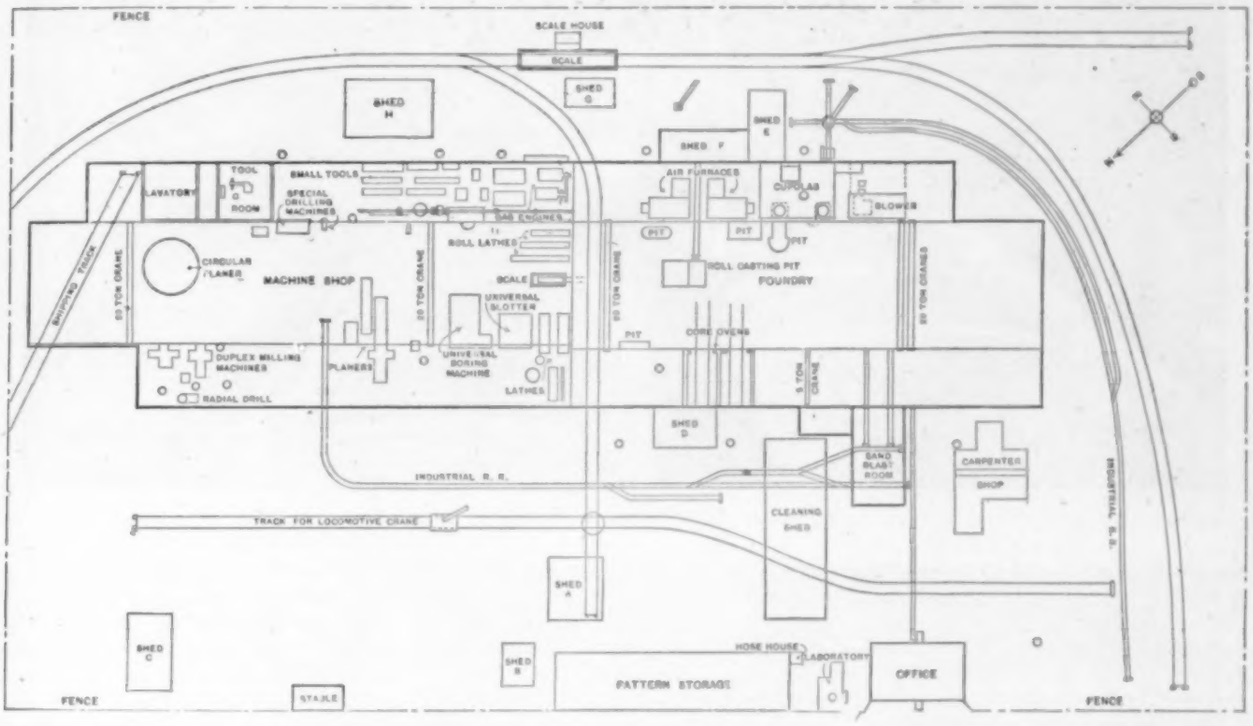


FIG. 1.—ARRANGEMENT OF THE PLANT OF THE WHEELING MOLD & FOUNDRY CO.

The Foundry.

Beginning in a small way 12 years ago, the company enlarged its original plant from time to time, and in 1901 erected the present plant which comprises two main buildings, foundry and machine shop, together with a number of auxiliary sheds, store houses, offices, etc. The original plant, called the "Manchester Works," is located about three-quarters of a mile distant from the present plant. It is still in operation, employing about 80 men.

The foundry and machine shop of the new shop present the appearance of one continuous building of brick construction, one story high, with a monitor roof. In reality, there are two buildings adjoining each other, and separated by a heavy brick fire wall. The foundry is 220 x 111 feet, 6 inches wide, and is spanned by one 30, one 20, one 10 and one 5-ton electric travelling cranes.

The building is divided into three bays, the center one being used for heavy floor molding in general, and at one end for the Pennsylvania railroad tunnel sections. One of the side bays contains the melting department, together with the fan for blowing the cupolas and two electrically-driven sand sifters. The opposite bay is divided into two sections by the core ovens, which are located, approximately, at the middle point of the foundry. One end is used exclusively for the molding of Pennsylvania tunnel sections, being spanned by a 5-ton crane, while the other end is occupied by the core makers.

The melting equipment consists of two cupolas and two air furnaces. One of the cupolas is a 56-inch Whiting, the other a 72-inch Colliau. Blast is supplied to both cupolas by a single Connersville blower, located in a room underneath the roof and driven by an electric motor. The charge for the cupolas is elevated to the charging platform by means of an electric elevator with about a 10-foot square platform. The air furnaces are of 15-tons capacity each, one of the Swindell and the other of the Smythe type.

The 72-inch cupola and the two air furnaces are provided with pits for the reception of the ladle when pouring. In the center and at one end of the main bay, there are two pits for roll casting. The core ovens, two in number, are about 15 feet wide, 25 feet long and 15 feet high. They are closed by Kinear rolling doors and heated by natural gas,

a pipe being laid along the base of each of the side walls, and perforated with holes at intervals of about two inches. The smaller cores are laid on the floors, while the larger ones are placed in metal cars which are run into the ovens on tracks.

As heretofore mentioned, probably the most interesting work done in the foundry is the molding of the Pennsylvania tunnel sections. The molds are made in curved flasks, which are shown in the illustration, Fig. 3. Wooden patterns

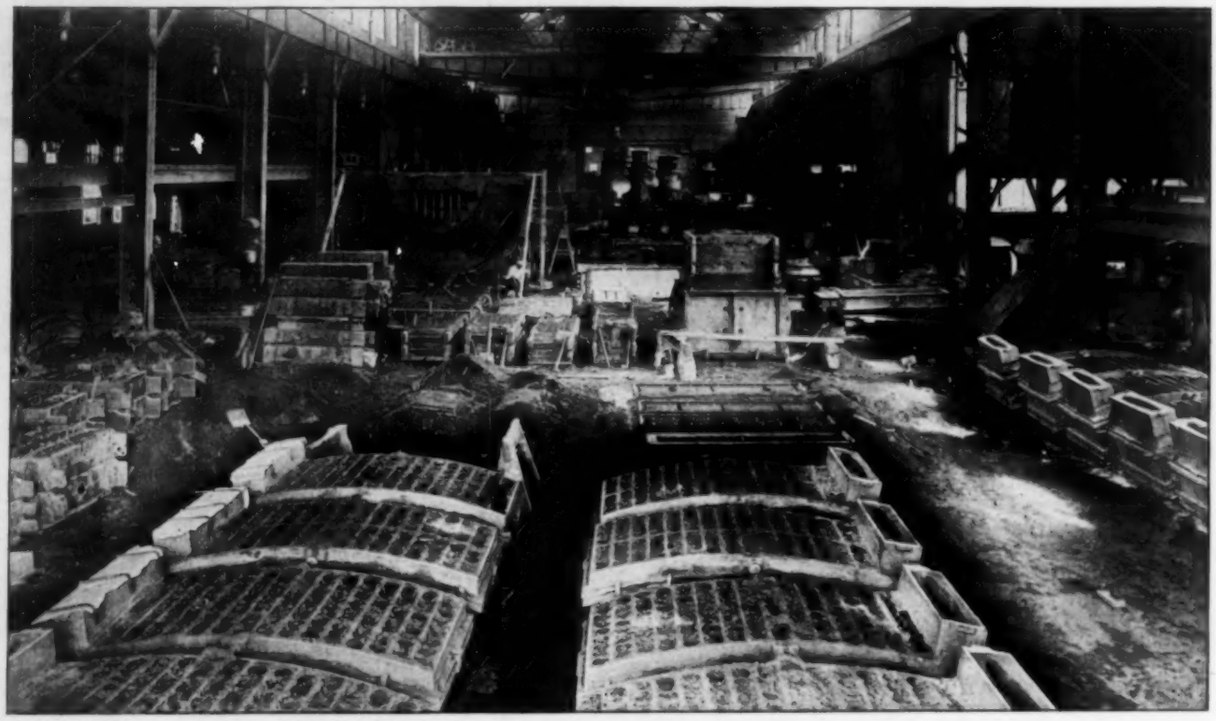


FIG. 2.—INTERIOR OF FOUNDRY.

are used, being rammed up in the flask by hand.

When the manufacture of these sections was commenced, all the holes were drilled. It was later found that holes could be cored in cast iron sections with sufficient accuracy and they are now so made. After the sections are cast, they are removed to the cleaning building, shown in the general plan of the works, where they are chipped and are then carried to the machine shop for facing.

Machine Shop.

The machine shop on every hand bears evidence of the wonderful ingenuity, not to say genius, which has been shown in the carrying out of contracts. In addition to the standard machines usually found in heavy machine shops, there are a number which are marvellous for their simplicity, but yet wonderfully efficient in the work they were designed to perform. Two special machines which possess the above qualifications are shown in the accompanying illustrations. These are a drilling machine, shown in Fig. 4, and a tool which might be called a circular planer, shown in Fig. 6.

The problem presented in the design of the drilling machine was as follows: Twenty-two holes were to be drilled in two side and two end flanges of a plate with a convex surface; these were required to be within a certain limit of error, as regards their position. While those in the two side flanges, which were parallel, could easily be drilled, as required, with a radial drill and a proper jig, the problem presented in drilling the holes in the end flanges with a standard radial drill or drill press was more difficult. A special holding device, together with a jig, would be necessary, and the section would have to be removed from it and turned end for end for each flange. The Wheeling Mold & Foundry Co. solved the problem, by means of the ingenious machine here illustrated. The piece is laid on its back on the bed of the machine and clamped in place. Instead of movable spindles, as used in a radial drill, fixed spindles are employed, being located in the exact position to be occupied by the holes. The spindles for drilling the holes in the end flanges are set at an angle, their center lines being perpendicular to the face of the flange. Power is furnished by a 25-horsepower motor which drives a nest of bevel gears underneath the center of the machine. Shafts parallel to the drill spindles which they serve, transmit this motion to the drills, the final transmission being through a train of spur gears. Feeding is done by means of a worm and wheel on each spindle. Flat drills of high speed steel are employed.

The circular planer consists of a cast iron ring, mounted on pedestals, as shown in the illustration. The interior of this ring is provided with gear teeth, it thus being an internal gear, 23 feet in diameter. The base of the machine has a slotted surface plate, to which the work is bolted. A vertical spindle is placed at the center of the circular ring, upon which an arm revolves, the outer end being supported upon the toothed circular ring. The outer end of this arm carries two cutting tools, one at the front and one at the rear, the front one being shown in the illustration. Motive power is furnished by an electric motor, which by means of a train of spur and bevel gears, drives a vertical shaft carrying at its lower end a spur gear meshing with the teeth upon the circular ring. The motor is of the Bullock multivoltage variable type, the various electrical connections being shown projecting from the upper end of the central vertical spindle. The tool posts consist of heavy blocks, mounted on the front and rear faces of the horizontal arm, the cross travel being obtained by means of a screw with a star feed upon the end. The device for changing the amount of feed is extremely simple, and is shown at the far side of the machine in the illustration. Two upright stand-

ards are bolted to the circular ring, a bar connecting the two. Eight holes are drilled in this bar, into which pins may be inserted. The number of pins inserted determine the amount of cross feed given to the tools per revolution. The economy of this machine can be readily seen; both tools are cutting continuously, no time being lost on a return stroke, as is necessary for the ordinary type of planer or shaper. In addition to the time saved, there is a large saving in the labor cost. No great amount of skill is required to set up the work and start the machine, and after it is started, the only attention that need be given it is to have a laborer watch it to see that nothing breaks or becomes loose, in which event, his duty is simply to stop the machine.

Other special machines, which have been devised in this shop which may be mentioned, are as follows: A portable drilling machine and a machine for boring and facing in one operation. This latter carries three facing cutters and a boring cutter, and effects a great saving over the ordinary methods of accomplishing this work.

In its general arrangements, the shop follows largely that of the ordinary heavy machine shop, being divided into three bays, with the heavy tools located in the center and the lighter tools at the side. The arrangement is shown in the ground plan of the works, and also in the photograph, Fig. 5. Aside from the special machine mentioned, one of the most noticeable is a Morton slotter, which has been altered by the company, so that it may be used as a planer as well. The cross rail of the slotter has been elevated and placed upon planed ways, and a driving mechanism provided, so that surfaces as large as 12 or 15 feet wide, and as many feet in length can be planed. Another extremely useful tool is a universal boring and drilling machine, which can be used in addition as a milling machine for finishing planed surfaces in any direction. These two tools, together with three large planers, the circular planer heretofore mentioned, four radial drills, five roll lathes and two large and powerful Ingersoll milling machines, are located in the center bay of the shop, where they are accessible to the traveling cranes. The special drilling machine heretofore described is located under one edge of the bay, and is also accessible to the crane. The lighter tools, such as lathes, shapers, etc., are all placed in one of the side bays. The tool room and lavatory are located in the opposite side bay at the lower end of the shop.

The material is handled through the shop, by means of two 20-ton and one 10-ton electric traveling cranes, spanning the center bay and by a 5-ton crane in one of the side bays. Electric trolleys and numerous air hoists provide handling facilities for the different individual machines, which are not accessible to the crane.

FIG. 3.—FLASKS FOR PENNSYLVANIA TUNNEL SECTIONS.

Motive power is furnished the shop by means of four gas engines installed in an engine room at the end of one of the side bays adjoining the foundry. Three of these engines are of the Westinghouse type and one of the Walrath. Two of the Westinghouse engines are of the three-cylinder type, and are direct connected to 75 and 48-kilowatt, direct-current generators, respectively; the remaining Westinghouse engine is of the two-cylinder type, direct-connected to a 30-kilowatt generator. The Walrath engine is of the three-cylinder type, direct-connected to a 90-kilowatt generator. In addition to these generators, there is installed a Bullock transformer for furnishing the various voltages used on the variable speed motor of the circular planer and of the special drilling machine.

The pattern shop is located in a second story of the building over one of the side bays, and is fully equipped with all the necessary wood working tools of the best quality. This arrangement, however, is merely temporary, owing to the fire risk of a pattern shop in such a loca-

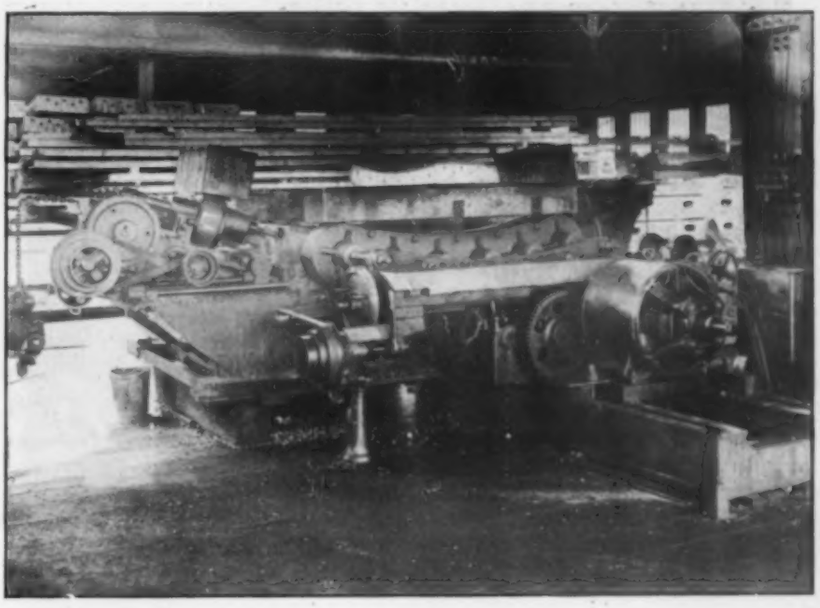


FIG. 4.—SPECIAL DRILLING MACHINE.

tion. A new pattern shop is soon to be erected, and the machine shop will then be practically fire proof, the roof being lined throughout with sheet metal.

The only other buildings of importance on the property are the sand-blast building and the casting cleaning building, which are shown in their proper position on the general plan of the works. The cleaning building is spanned by a 15-ton locomotive crane, furnished by the Browning Engineering Co., Cleveland, which is used for unloading raw material, and for handling finished stock. The unloading of pig iron is carried on by means of this crane, which uses an electro-magnet suspended from the end of the jib. Some idea of the capacity of the plant, as well as of the work done, may be obtained from a view of the

FIG. 5.—INTERIOR OF MACHINE SHOP.

5-ton electric traveling crane, and is provided with pneumatic tools for cleaning castings. The pattern storage is located along one edge of the property, and is also of a temporary character. The office is a two-story and attic building, built of concrete blocks. The upper floor contains the drafting room.

The facilities for transportation of material through the works are splendid. Narrow gage tracks extend into the buildings and through the yards, as shown in the plan of the works. In addition to these narrow gage tracks are a number of lines of standard gage railway, which connect with a spur of the Wheeling Terminal Railway, connecting with all the trunk lines running into the city. Through the stockyard, a view of which is shown in Fig. 7, is laid a track for a stockyard, which shows a large amount of finished material awaiting shipment.

Mining Supplies Needed.—Upon information furnished by Consular Agent Arthur Verderame at Licata, Consul W. H. Bishop of Palermo reports that in that part of Sicily, which is largely engaged in sulphur mining, extensive use is made of electrical appliances, wire rope, hand tools, etc., employed in the mining and work shops. "Many of these articles are imported at present direct from Germany or through agents of German houses established at Milan," says Consul Bishop. "Travelers from these houses visit the district regularly soliciting orders, and it is estimated that this trade reaches $100,000 a year.

BOOK REVIEWS.

Engineering Tables and Data. By W. W. F. Pullen. Manchester, Eng. The Scientific Publishing Co. 5½ x 8¼ inches. 87 pages. Cloth. Supplied by THE IRON TRADE REVIEW for 75 cents, postage and duty extra.[1]

This little work is a handy one for a student to have for convenient reference in so far as the things contained in it may be the things that he wishes to refer to, but as stated in the preface, it can by no means take the place of an engineer's pocketbook.

Among the contents are the following: Table of natural sines, etc., only one page; common logarithms and antilogarithms, two pages each (as four placed figures are used, the tables are almost worthless except for approximate calculations); a very complete table of hyperbolic logarithms; tables of pressure, density and expansion of water; specific heats, melting points, etc.; properties of saturated steam; diagram for throttling calorimeter; temperature-entropy table;

[1]This book is not in stock, and must be imported. About three weeks must be allowed after receipt of order.

British and metric systems; mensuration; co-ordinate geometry; hyperbolic functions; integrals; differential equations.

The book contains too little information to be of any particular value except to the student of certain schools the exercises of which have relation to the information contained in this book.

The Principles and Practice of Iron and Steel Manufacture. By Walter MacFarlane, F. I. C. New York. Longmans, Green & Co. 5 x 7½ inches. 266 pages. Illustrated. Cloth. Supplied by THE IRON TRADE REVIEW for $1.20.

In the preface the author states that he was for fourteen years engaged on the technical staff of iron and steel works, a fact which may account for the attention given to practical details throughout its pages. "The intention is to provide—as far as the scope of the work permits—sound instruction and reliable information for technical students, metallurgists, engineers, and others engaged in the various branches of the iron and steel trades."

The author starts with preliminary chemical considerations and definitions, then in Chapter III treats of the puddling process in considerable detail, describing the furnace, the chemical theory and the practical operation by puddling, and briefly touching on rolling mills and hammers. As the book is written in England some of the words used are not familiar to American readers and probably not to American workmen in the trade. For instance, the chief materials used for fettling are said to be "best tap," "bull dog," "purple ore," "hematite ore" and "pottery mine." These are each defined, but with the exception of hematite ore, the names would not likely be understood by Americans.

The statement that certain pig irons are known as "hungry pigs" because they "eat" so much of the fettling will probably also sound strange to an American puddler, and the statement that squeezing is a system which does not appear to be in favor may be correct in England but the system is universal in America. The crocodile squeezer is mentioned but nothing is said about the rotary squeezer.

Chapter IV is devoted to tool steel and describes at considerable length the cementation process for making bars for melting. Here also there are unfamiliar terms, as spring heat, country heat, steel-through heat, aired, glazed and flushed bars.

A good chapter follows on treatment of tool steel. Mild steel made by the Bessemer and Siemans-Martin processes with the Thomas and Gilchrist improvement for making basic steel are described with considerable detail in several following chapters. A brief chapter is given on the mechanical testing of steel and iron, which is followed by one on foundry practice and iron and steel castings. Then two short chapters follow on malleable castings and case hardening.

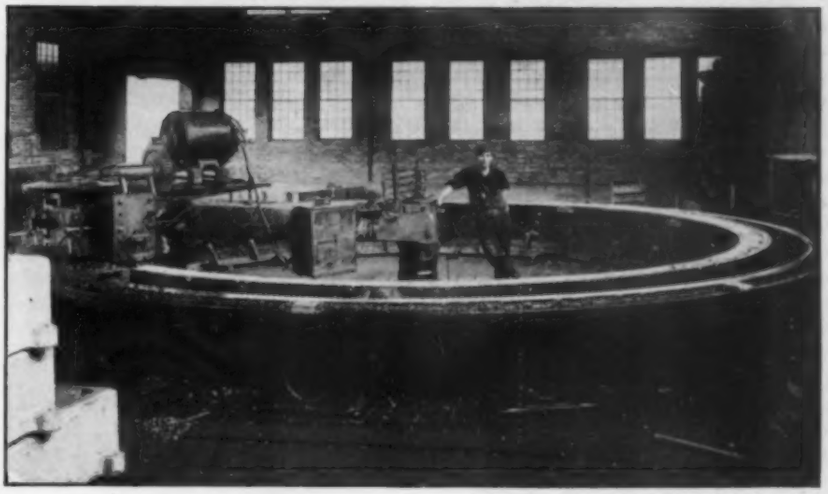


FIG. 6.—CIRCULAR PLANER, WHEELING MOLD & FOUNDRY CO.

Iron ores and the kind of pig iron produced from them are next treated, together with the proportion of ores for smelting, and the blast furnace and its equipment. A very satisfactory chapter on the working of the blast furnace and another on the products of the blast furnace follow. The concluding chapter is on fuels, fluxes and refractory metals and the appendix contains numerous tables, analyses of ores, fuels, and refractory metals, and a syllabus for examination in iron and steel manufactures of the City and Guilds of London Institute.

On the whole, the book is the most satisfactory short treatise on the manufacture of iron and steel that we have yet seen. It is clearly written and well illustrated, with the exception of some very black and muddy reproductions of photographs of the interior of works. The style is clear and interesting and shows that the author is a thorough master of the subject and also is an experienced writer with a very good style. It is to be regretted for the sake of American readers that the book was not written in the light of American practice and with American nomenclature, but we have no book published on the subject written by an American which can take its place.

The book appears to be remarkably free from errors, but there is one statement that should not be passed without criticism. On page 11 it is stated that the slag in wrought iron enables a fibrous

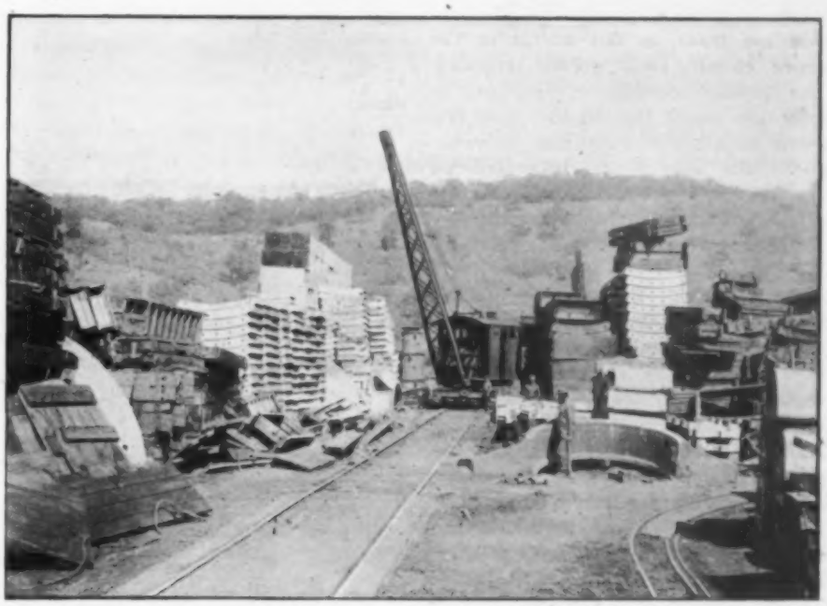


FIG. 7.—STORAGE YARD, WHEELING MOLD & FOUNDRY CO.

structure to be developed and this fibrous structure hinders dangerous crystallization. This is certainly a mistake, for there have been innumerable instances of what appears to be and is called crystallization in fibrous wrought iron; and where crystallization due to shock is feared, it is found that high carbon steel, such as spring steel, is far better than wrought iron.

The Engineering Index Annual for 1906. New York. "The Engineering Magazine." 412 pages. 7 x 9½ inches. Cloth. Supplied by THE IRON TRADE REVIEW for $2.00.

This volume is a compilation of the "Engineering Index" published monthly in "The Engineering Magazine" during 1906, and indexes the leading articles in the various technical publications throughout the world. It brings down to the close of 1906 Vol. IV of "The Engineering Index," which was reviewed in this paper on Feb. 14, 1907. The classification, however, is a little different, being the principal divisions of engineering practice, namely, civil, mechanical, electrical, mining, engineering, etc., and under these according to the recognized special divisions of each field. Under these special divisions, the arrangement is strictly alphabetically in each section. This is a classification followed by the "Engineering Index," which is published monthly.

Brazil Duties Reduced.—Consul-General George E. Anderson, of Rio de Janeiro, reporting on the reduction of the import duties on barbed-wire fencing and agricultural implements or machines, when imported direct by Brazilian agricultural interests and by state and municipal governments, says: "The Brazilian government in 1904 so increased the duty on barbed wire that the trade in this article in the entire country was greatly crippled. The further increase in 1905 practically destroyed the trade. The law given effect in the current year reduced the duty to a theoretical ad valorem of 5 per cent, or, with the extras and incidentals, an actual duty of about 10 per cent ad valorem."

The American Steel & Wire Co., in its report to the secretary of the commonwealth of Massachusetts concerning its condition on Feb. 28, 1907, shows total assets of $129,172,763, against $128,573,760 in 1906. The American Radiator Co., as to its condition on Jan. 31, 1907, reports assets of $12,499,717, against $12,143,088 in 1906. The American Bridge Co., likewise shows assets of $9,412,082 April 1, 1907, compared with $8,632,775 in 1906.

A NEW SHAKING DEVICE FOR THE CHEMICAL LABORATORY.[1]

BY J. M. CAMP.[2]

Among the various pieces of apparatus going to make up the equipment of the modern laboratory, it is the purpose of this article to describe the latest appliance, in the shape of a shaking device. It was designed and is particularly adapted for the purpose of hastening the precipitation of phosphorus by the well-known and almost exclusively used molybdic acid method, and in the solution of steels or pig irons for carbon combustion. But is equally useful where agitation is desired in a flask for either dissolving or precipitating. As can be seen from the photographs, it consists of a frame supporting a vertical shaft, which is revolved by a six-inch pulley wheel. The upper part is bent slightly from the perpendicular. Encircling the bent portion of the shaft is a hub which in turn supports a flat disc on which the flasks to be shaken are attached. The hub and disc are prevented from turning, when the shaft is revolved, by suitable teeth on the underside of the hub meshing into corresponding teeth on the top of the supporting frame.

On revolving the shaft the motion of the disc is ideal for the purpose intended, and can be best likened to the simultaneous pitching and tossing of the deck of a ship in a heavy sea. With each revolution of the shaft a wave travels around the flask or flasks on the disc exactly as in hand shaking, and by increasing or diminishing the number of revolutions the number and intensity of the wave movement is controlled. To obtain the maximum agitation and still retain the solutions in the flasks, without corking, from 100 to 140 revolutions per minute has been found very satisfactory. The disc is made to hold six flasks, any one of which can be placed in or removed from the machine in a fraction of a second. The gripping device is movable, up or down, enabling it to be quickly adjusted to hold any size flask from a six ounce to a twenty-four ounce florence or erlenmeyer. The electrical power required to operate it is about one twenty-fifth horsepower, less than the average desk fan motor is consuming, so that with the proper countershaft to give the desired number of revolutions, any source of power may be used.

Heat can be applied to the apparatus if desired by means of a circular burner,

FIG. 1.—NEW SHAKING DEVICE FOR THE CHEMICAL LABORATORY.

[1]A paper read before a joint meeting of the American Chemical Society and the Chemical section of the Engineers' Society of Western Pennsylvania, May 23, 1907.

[2]Chief Chemist, Carnegie Steel Co., Duquesne, Pa.

but it has been found that by adding the hot liquid to the flask, or heating the contents of the flask before placing it in the machine, the same end is obtained.

The advantages of the machine over

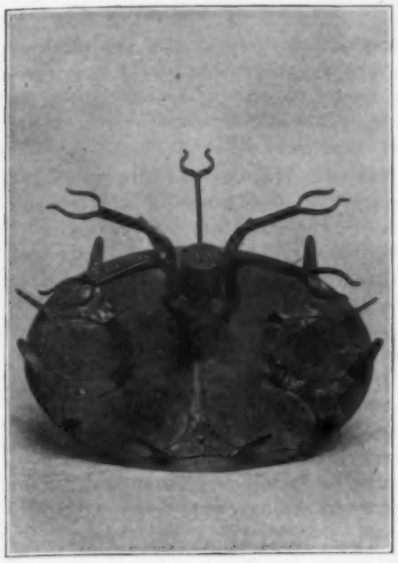


FIG. 2.—BOTTLE HOLDER FOR SHAKING DEVICE.

hand shaking are to the chemist only too obvious. During the time of shaking the operator can be doing other more profitable work, with the assurance that aside from being relieved from the fatigue of the operation, the machine is not shirking the job—as is the natural disposition of mankind, resulting in false

FIG. 3.—SHAFT OF SHAKING DEVICE.

analysis, while with the machine the reverse is the case, it is always allowed to do its full quota of work. Then under its constant conditions, in phosphorus precipitation for instance, a precipitate of like crystallization is always obtained, aiding materially its estimation by judging its bulk, as is the practice in most busy open-hearth steel works laboratories.

Too much can not be said in praise of the machine, its simplicity, ease of operation, quietness, and the readiness with which the flasks can be placed in and removed from the apparatus, and the fact that the flasks do not need to be corked with the trouble that entails, will commend it to any one. It is the consummation of the chemist's dream as a shaking device, and will fill a long felt want.

Application has been made and the claims granted for a patent covering the ideas embodied in this machine, and it is the purpose to put it in the market as soon as suitable arrangements can be made. Any person further interested in the subject can communicate with the writer.

Limestone Lands Bought.—The Cleveland Furnace Co., Cleveland, has purchased 123 acres of land on Kelley's Island, O., having deposits of limestone which it is estimated will be sufficient to meet the requirements of five furnaces for 50 years. David T. Croxton, president of the company, quietly closed this important deal, although it was generally supposed that all of the land on the island containing limestone, which is famous for its superior quality for blast furnace purposes, had been acquired by other interests.

EXTENSIVE STRIPPING

At the Virginia and Other Mines—Some Interesting Features.

Office of THE IRON TRADE REVIEW,
411 Providence Bldg.,
Duluth, May 25.

The hill east of Virginia is a busy place this spring. Three new shafts have been put down during the winter. The Republic Iron & Steel Co. has a new South Bessemer, Pickands, Mather & Co., the Yawkey and on the edge of the old Minnewas property Coates and Miller have put down in the last sixty days a shaft called the Alberta. The first shipments were made this week. At the Yawkey the shaft house is just being completed and placed over the shaft. The Oliver Iron Mining Co.'s group of Virginia mines has been almost

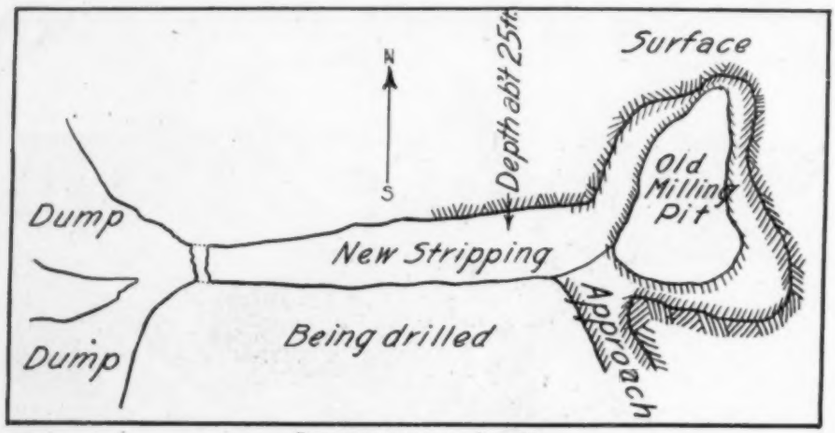
THE LEMARD MINE, WHICH HAS JUST BEEN TAKEN OVER AS A PART OF THE UNITED STATES STEEL CORPORATION-GREAT NORTHERN ORE DEAL.

entirely stripped. Nearly a million yards were removed the past winter, four and five shovels being in service at times. The Missabe Mountain, Lone Jack, Ohio and Norman are now one continuous pit. The surface is not very deep at any place, between 40 and 50 feet, except in parts of the Missabe mountain so that it will be readily seen that a considerable area is involved in the yardage removed.

The Missabe Mountain was all stripped previous to this year, shipments of over three and one-half million tons having been made. The mine is opened up in the hillside, so that from the bottom of the pit where one shovel is now mining at a depth below surface of nearly 100 feet,

the tracks run out with only a slight grade. The other properties are on the crest of the hill and the ore lies much nearer the surface. To get this ore out, the old approach cut through the side of the hill and long since abandoned is again being brought into use and track is again being laid along the old grade across the fields from the D. M. & N. track. A new coal trestle is also being built.

From the entrance of this old approach into the pit, high up on the south bank of the Missabe Mountain, a grade is being laid out on the old shelf of ore over into the Lone Jack and Ohio mines. Part of the way it has been necessary to cut through the ore bank where the shelf was not formerly worked and a shovel is now running in from the Ohio and casting the ore over into the pit. The Norman has an additional approach cut in from the east end.



STRIPPING AT THE ADAMS.

The ore in the Ohio lies close to the surface, but apparently in large convolutions with crests and troughs and the stripping is just now at a point where the crests of ore are being cleaned off. The dirt is dumped just a little to one side where the surface still lies deep in the trough of the ore and where a steam shovel will have to make another cut down through the mine. As a result of the short distance, the dirt has to be moved in the clean up, most of it being handled by men with shovel and wheelbarrow.

The Norman, nine years ago, was worked underground and as a milling pit and that milling pit has been a great inconvenience in stripping though now only a small knoll of surface adjacent to the mill remains. Most of the stripping has also been over the old underground workings and a considerable depth of surface still remains to be moved, which, as the ground is now beginning to soften, is commencing to cave in places. A shovel will probably be in the Ohio next week shipping ore.

Surface preparations for the operation of the new No. 4 Spruce shaft at Eveleth are nearly completed. The stockpile trestles are just being completed and a Prescott crank and flywheel pump is on the ground ready to be lowered into the pump station. Grading for the loading track is nearly completed. In the new power house built last year, the erection of the Sullivan Machinery Co. first motion hoist, 6-foot drums is about finished and ready for rigging up the skip cable. The General Electric generator direct connected to a Twin City engine built by the Minneapolis Steel & Machinery Co. is now running, but the air compressor has not yet been installed.

A large amount of stripping has been done at the Adams during the winter months, out from the west side of the old milling pit. The old pit with the exception of one or two mills is now idle. The sketch accompanying shows in a measure what has been done and the shape in which the property is being opened. In explanation it may be said that there is a considerable rise in the ground from the dump toward the east, so that the stripping tracks run out of the cut almost on a level to the dump with a depth at the east end of about 25 feet. The dumps are both high and the surface at the present depth is of sand clay and boulders with a fairly firm top soil. Only two shovels are working at present.

At the Fayal a large production is asked for this season and the output will be probably about 2,000,000 tons, though at the present time that rate of production is not being reached by 40,000 tons a week. This is partly accounted for by the weather and partly because the larger shipments will come with the putting of more shovels into the pit. During the fall and winter, practically all of the surface between the old No. 3 pit and the extension has been removed and now all that remains is the clean-up which is at present under way preparatory to putting a shovel into the ore. This should come in the course of a week.

At the time of the fire at No. 2 shaft, the shaft house of course came down and the shaft was blown in to smother the fire. Work had been abandoned in No. 2 shaft previous to that time and the No. 2 workings were being reached from No. 4 shaft through a drift that came in under them. On either side of the shaft, the ore had been entirely removed and the ground caved, but the shaft and the loading track had tied up quite a width of ore which will now be taken out through No. 4.

The stripping at the Shenango which has an average depth of about 110 feet and will before being completed amount to about three million yards, has been begun under conditions almost as difficult as could be encountered. A depth of several feet of muskeg and blue clay covers a large portion of the area to be stripped and up to this time no other material has been accessible, not even gravel or sand enough to ballast the stripping tracks. In making the first thorough cut the shovel had to be supported on a raft of heavy timbers and cribbing, but it is hoped soon to be down below the soft surface into a solid brown clay. Without the freezing weather which kept the dump fairly solid, the undertaking would have been even more difficult. The real stripping began about Feb. 1, but progress has been slow and it will be at least toward the latter part of next year before ore is shipped from the pit.

For the stripping work geared locomotives and 7-yard cars are to be used and, as anticipated now, the ore will be hoisted out of the pit in the shaft. The pit will lie between the old shaft and the new one put down last year. It will not interfere with the underground operation of the old workings which are to the west of the old shaft, but will open into the drifts now being driven out under the stripping area from the new shaft. The output of the Shenango this season will increase from the 380,000 tons mined last year to about 500,000.

THE MALLEABLE FOUNDRY AS A BUSINESS VENTURE.[1]

By Dr. Richard Moldenke.

Hardly a week passes but that I receive inquiries regarding the cost of establishing malleable castings plants. The answer I have to write invariably is: "Unless you have at least five tons daily to make—don't."

When one has personally gone through the building of a great establishment, and has the making of hundreds of thousands of tons of malleable castings behind him, caution is the order of the day, and unless the quantity is sufficient and the deliveries from outside unsatisfactory, it is wisest to buy from existing plants rather than to venture upon the little known fields of the heat treatment of white cast iron, for that is what the malleable casting industry comes to in the final analysis.

As a rule the requests for information come from those iron foundries which get orders for plenty of gray iron castings with a sprinkling of malleable, and possibly some steel castings also. The high price they have to pay outside for small lots naturally interferes with their legitimate profit, and hence the desire to produce for themselves. I believe that when the electric furnace is perfected, or made commercially possible, that a different aspect will be given to the case, but at present we have to take things as they are.

The question of embarking into the malleable casting business resolves itself into a market for the work to be produced, and the location to make that work at the lowest cost. It is very rare that a location is picked out unless the territory tributary to it can support a comfortably live malleable plant.

Those concerns which use a large quantity of these castings are the natural pioneers for a given region. The fact that they can make money where they are would be a pretty good guarantee that they can either save money or get their desired deliveries by going into the malleable casting business. Moreover, their profit as manufacturers will carry them over the two or more years of loss in starting the malleable plant.

Advantages and Disadvantages.

To sum up briefly the advantages and disadvantages, I give the following:

(1)—The expanding market for malleable castings, and the great room for improvement in most of the producing works, gives a living chance to the man to go in the business, provided he understands it thoroughly.

(2)—In times of prosperity, plants in existence, where great caution is exercised, must turn away large quantities of offered work, being unable to produce it.

(3)—The moment the malleable castings works are full, deliveries are so desperately bad and slow that attention is turned directly to new enterprises coming in.

(4)—The adaptability of the malleable casting to specialties in railroad, agricultural and hardware lines, is such that the beginner has a good chance to succeed provided his specialty is good.

(5)—Where absolutely good material is required, it pays the consumer of malleable castings to go into making these himself, provided he has enough tonnage. Only he who knows how easily one can slip up on the quality of the malleable casting, also knows how often this is done, and the customer is not the wiser.

(6)—The malleable product from its adaptability to specialties, and comparatively light castings at that, means a production in quantity of each separate piece. Hence it is not a question of half a dozen castings, but oftentimes several hundred thousand, or in other words continuous production, with comparatively well regulated and systematized shop cost.

Now the disadvantages follow from the above:

(1)—The expanding market while making room, also leaves very empty shops in dull times, for the existing plants usually expand with each high wave of prosperity and manage to hold the desirable customers.

(2)—Where the work turned away by the full plants is taken by the beginner, it is at either lower prices, or if at high prices, is lost again when these fall. The ability of the founder who commences, to hold customers who may have been exasperated elsewhere, or his ability to produce cheap enough to cut under, or most likely his having a specialty which pays the freight, will make or break him.

(3)—The high capital required is a great detriment, being about four times as much as for the same tonnage in gray iron for the works alone. This means more than appears on the surface. The malleable casting process is intricate, the chances of loss great, and it takes fully two years to get a desirable class of men in the shop, after all the bums of the country have passed through it. Hence the chances of no profit, if not worse, for a long time, which must be met and carried until success appears. To give an instance, a rough calculation of the cost of a shop to produce 50 tons of castings daily would come up to say $250,000. By the time that shop would be actually producing the 50 tons daily at a normal shop cost, over double the amount of money will have been expended. Then, however, with a good market, the shop will pay handsomely.

(4)—The high grade of skill required. While the process as we now know it is comparatively simple, we have to reckon with so many factors that an expert in malleable castings is a scarce article. With the range of composition for the iron for various thicknesses of the castings very close, a white iron to start with, with its double contraction, and danger of shrinkage in the interior, with the necessity of chills, the limit to the size and weight, the expansion in the anneal, etc., it is a pretty delicate task to turn out large quantities of various classes of castings, and have them all high grade. Hence the high salaries the important men must be paid, and the eternal vigilance required in the works. It must be remembered that your day's work goes into the anneal, and you do not see it for a week. The next day's work the same, and hence a mistake in the temperature of the ovens, and you have ruin for possibly a week before you find it out. I remember the slipping off of the night annealer to a nearby speak-easy, with the increase in the natural gas pressure just at that time, which meant thousands of dollars of damage for two or three hours' inattention.

(5)—The fierce competition that is met with. This is queer but nevertheless the case. In spite of all the troubles the malleable casting man has to contend with, he makes himself more by cutting his competitors' prices, until all have very little left. This is primarily the case, because to run a shop successfully and to hold an expensive organization, everybody must be busy. The first aim therefore is tonnage, to keep the shop producing at maximum capacity all the time, practically regardless of prices sometimes. Hard times drop prices in the malleable shop far quicker than in the gray iron establishment. I remember the time when castings were sold to the railroads at a shade less than two cents a pound, delivered. When it is remembered that malleable castings ought to bring a cent a pound more than the corresponding gray iron work, it will be seen what a new man is up against in starting when prosperity is on the wane.

The further reason for this fierce competition is that nearly everybody in this line has a specialty or several of them, which sell under patents and for as high a price as the community will stand. Hence this velvet can cover a deficit to keep the rest of the works in operation. This, of course, is hard on the man who has no specialty, and hence again, the necessity of having

[1] A paper presented at the Philadelphia (May, 1907) meeting of the American Foundrymen's Association.

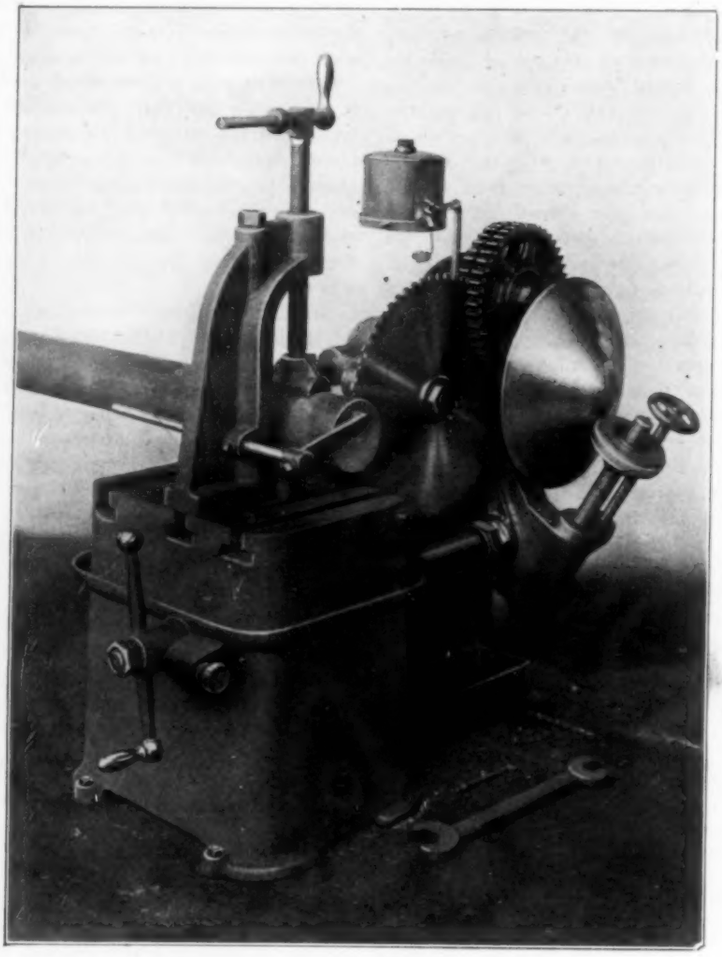
abundant capital until such a specialty is found.

To sum up then, with a good specialty or a number of castings used in the manufacture of well paid for articles, and a sufficient daily tonnage, it is good policy to go into the malleable casting industry as a business venture; but with less than say five tons daily safe, and with insufficient working capital, and men not thoroughly trained in this line, it is better to let it alone.

A NEW TYPE METAL SAW.

The accompanying illustrations show a new type of metal saw recently placed on the market by the Quincy-Manchester-Sargent Co., New York. The method of driving the blade is somewhat novel, it being driven from the periphery, but instead of a sprocket drive steel rollers are used, being hardened, ground and journaled in removable steel bushings held in the double driving gear. The machine has a capacity for cutting rounds up to 6 inches in diameter and I-beams in a vertical position up to 10 inches at any angle up to 45 degrees. The feed is of the variable friction type, adjustable with the machine in motion, and is powerful and continuous in its action throughout its entire range. The machine is furnished, when desired, arranged for direct-connected motor drive. The following are some of the principal dimensions of the machine.

Diameter of saw blade	18 inches
Thickness of saw blade	3-16 inch
Travel of carriage	10 inches
Speed per minute of blade	35 feet
Cutting feed per minute	3-16 to 1 inch
Maximum depth of cut	6¼ inches
Height from table to saw axis	5 inches
Length of front table	14 inches
Width of front table	18 inches
Width over all	2 feet 9¾ inches
Length over all	5 feet ½ inch
Height over all	4 feet 2½ inches
Approximate weight	1,500 pounds



QUINCY-MANCHESTER-SARGENT METAL SAW.

PREVENTION OF BLAST FURNACE GAS EXPLOSION.

A patent has been obtained by J. W. Dougherty, general superintendent of the Pennsylvania Steel Works, on a method of preventing blast furnace gas explosions when starting up a furnace after it has been banked during a campaign. Starting a furnace under these circumstances is more or less of a dangerous operation, and explosions sometimes happen when the gas meets the air, which has accumulated in the various combustion chambers in and around the furnace. The method devised by Mr. Dougherty consists broadly in filling practically all the space between the stock in the furnace and the gas burners in the stove and under the boilers with a gas or vapor which is neither a combustible nor a supporter of combustion. To prevent gas explosions in furnaces in blast during or after any stop of longer or shorter duration, it is necessary only to fill the dust catcher and downcomer with this inert gas or vapor when the blast is put on. This will act as a piston separating the air which accumulates in the gas main from the combustible gases which follow this piston and ignite without a puff as soon as it reaches the several combustible chambers. The cost of applying this method is low, and the operating expenses inappreciable. The cost of maintenance is also low. This method has been used for two years at the Pennsylvania Steel Co.'s furnaces at Steelton and Lebanon, Pa. E. A. Uehling, Passaic, N. J., is sole agent.

Official denial is given the report, circulated by newspapers during the past week, that the United States Steel Corporation contemplated the issuing of short-term securities to care for the construction work now going on at Gary.

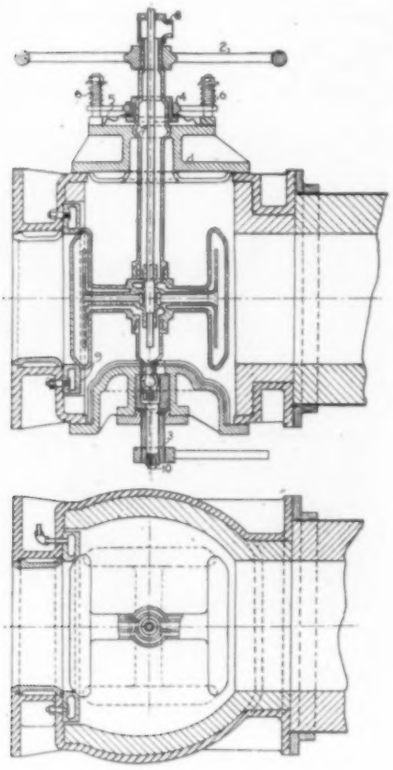
A NEW HOT BLAST OR GAS VALVE.

A new hot blast or gas valve, embodying several novel features, is shown in the accompanying illustration. Two valve discs are mounted on a revolving stem, in order to secure perfect balance under all pressures, and to permit the use of either in case of damage to the other. On one end of the valve stem, which extends through the head 1, is mounted the handwheel 2, by which the stem is turned through any desired angle. The other end rests in the eccentrically bored bushing 3, which when turned by the lever attached to it, slightly raises the valve disc from its seat, after which it can be freely turned by means of the handwheel above mentioned. For closing the valve the operation is reversed.

No stuffing boxes are used, their places being taken by the bushing 3 and cap 4 respectively, whose conical surfaces are pressed against corresponding seats by internal pressure in the valve in the case of the former, and

by the springs 6 in the case of the latter.

While the weight of the valve stem and disc is transmitted by the bead 7 on the valve stem, resting in the bore of the head 1, the escape of gas is prevented by the cap 4, secured to the head by the corrugated diaphragm 5. This, by its deflection, allows for the lifting of the valve from its seat, the actual movement at this point being small, since the bead 7, acting as a fulcrum, is close to the diaphragm. The valve disc can thus be always made to seat tightly even with unequal wear.



A New Hot Blast Valve.

The springs 6 counteract the internal pressure against the diaphragm, relieving it of all strain.

The valve stem and disc are effectively cooled by a circulation of water, which enters through the central pipe and is discharged through the tee 8, after flowing through the discs. The removable seat 9 is likewise cooled.

In order to remove the valve disc or seat, the plug 10, in the end of bushing 3, is removed, a bar screwed into the end of the valve stem, when, by loosening the bolts on the head 1, the whole can be quickly and easily slid out of the casing for inspection or repair. The inventor and patentee of this valve is Henry Cronemeyer of McKeesport, Pa.

A UNIVERSAL ROLLING MILL.

A universal rolling mill is the subject of a patent (846,825) granted to Victor Chartener of Pittsburg. The object of the invention is to dispense with the usual method of operating the vertical rolls of universal mills by means of bevel gears, mounted on a horizontal shaft reaching from one housing to the other, and movable along this shaft. The inventor claims that the objection to the bevel gear drive on the top of the vertical roll is that in practice the wheels must be made so large that they will not permit of the close approach of the rolls to each other. If small bevel wheels are used they are subject to frequent breakage. Another form of drive places the gearing for one roll below the roll. With this arrangement, however, the gearing tends to become clogged and cut with scale and is not easy of access.

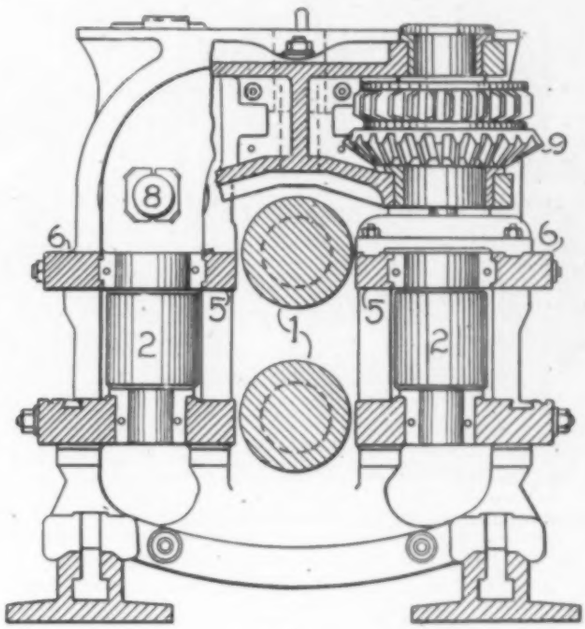


Fig. 1.—Half End Section and Elevation, Universal Rolling Mill.

The object of the present invention is to provide a rolling mill whose vertical rolls may be positively driven without the use of bevel gearing and without the employment of an intermediate or third roll, as is sometimes used. The accompanying illustrations show the method by which this object is accomplished. Fig. 1 is a vertical transverse section of the mill taken through the bearings of a pair of vertical rolls on opposite sides of the horizontal rolls, the vertical rolls and one corner of the housing being shown in elevation. Fig. 2 is a longitudinal section of the mill taken on the line AA of Fig. 1. The housings are mounted on a pair of shoes of ordinary construction, and mounted centrally in the housings are two horizontal rolls, (1) one above the other. On each side of the horizontal rolls are a pair of vertical rolls (2), whose necks are mounted in the horizontal arms (3) of the frames or carriers (4). The upper arms (3) are provided at their ends with tongues which fit in horizontal grooves in the upper guiding and supporting bars (5) and (6) of the rolls (2). These bars are supported on lugs on the housings, one pair of rolls being guided by one pair of bars (5) and (6). These bars are properly spaced by a yoke, which is bridged across and bolted to the bars. The vertical rolls are removed by first removing the yokes, the bars (6) and the caps on the rolls and then moving the rolls to the interior of the machine whence they may be taken out at the sides of the machine between the housings. The horizontal rolls may be moved endwise through openings in the housings.

The vertical rolls are moved horizontally when in use, by means of the screws (7), which work in nuts fixed to the housings. The inner ends of the screws bear against the outer faces of the frames (4) and the screws are moved lengthwise by means of geared nuts, shown in section in Fig. 2, and driven by any suitable means.

The vertical rolls are driven from two shafts (8) in the same vertical planes as the vertical rolls (2). These two shafts extend only through one housing and have at their inner ends bevel gear wheels which intermesh with vertical hollow gear wheels (9),

which lie against or near the inner face of one of the housings. These bevel wheels have mounted on them a set of spur teeth, which mesh with a corresponding spur gear journaled in the same frame as the gear (9) and having its axis vertical. The rolls (2) are provided with a deep recess, extending into the body, and the bottom of this recess and the interior of the gear wheels (9) and (10) are provided with gear teeth projecting inward. A vibrating spindle (11) rests on the bottom of each recess in the rolls and extends into the recesses in the wheels (9) and (10), which corresponds with and drives the rolls. Each spindle has its ends provided with gear teeth, which mesh with the teeth on the interior of the wheels and rolls. The tops of the rolls and the bottoms of the gears are made flaring in the interior, in order to allow the rolls to move horizontally in their guides beneath their corresponding wheels while still intergeared. The recesses in the wheels are extended up through the tops of the wheels and are large enough to permit the driving spindles to be drawn up into them. The teeth on the spindles are curved both longitudinally and transversely to allow the same to rotate while inclined or connecting members not in the same vertical plane.

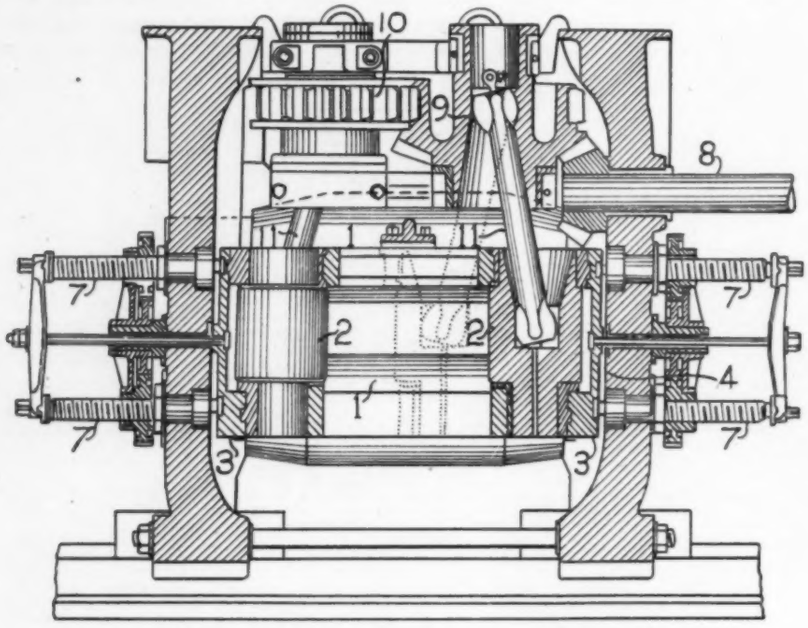


FIG. 2.—SECTIONAL ELEVATION, UNIVERSAL ROLLING MILL.

The Lebanon Valley Chain Co., Lebanon, Pa., has applied for a state charter to operate a plant near Lebanon. The applicants for the charter include Asa A. Weimer and Edgar Weimer, of Lebanon.

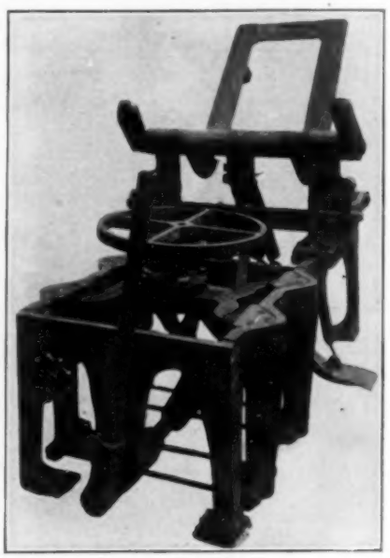
GLENWOOD ROCKOVER MOLDING MACHINE.

The principal advantage claimed for the Glenwood rockover molding machine, shown herewith, is that regular hand patterns can be used for fastening them to a board if they have flat backs, or if irregular in shape, the cope and the drag can be made hard match, the pattern being used for making all the drags. It is then placed in the match for making the copes, which does not interfere with its usefulness as a hand pattern. All parts of the machine are interchangeable and sufficiently strong to withstand hard usage. The machine is made as low as possible so that it is convenient for the operator to tread off a mold. By dropping the mold away from the pattern, which is done on this machine, the mold is left resting on the frame at a convenient height to be taken away.

The machine is so arranged that when the mold is rolled over in position to have the pattern drawn, the mold carrier is rigidly locked in a position exactly at right angles with the ways. It is also furnished with means of adjustment for wear, that the match carrier can always be kept in this position, and as it is locked, it allows the operator to give his undivided attention to the next operation. After the pattern is drawn, the lock is released by a foot treadle, placed convenient for the operator. The mold carrier is counterbalanced by springs with a takeup, so more or less tension can be readily applied to the mold carrier, to counterbalance the different weights of match.

The machine is equipped with a very simple and effective evening device as shown, which has ample capacity to take care of all irregularities in flasks and bottom boards. By a hand wheel convenient for the operator, this evening device is released, and at the same time the table is brought up under the bottom board, and without any resistance, is allowed to take a seat firmly under the board. By revolving the hand wheel, it is clamped firmly into position, and if a mold is of uneven weight on the different sides, it will fall away from the pattern in a perfectly straight line.

The lever for dropping the mold is arranged on a toggle joint and considerable movement of the lever is required when beginning to mold to move the mold very little, thus insuring an even drop. On account of this leverage, however, it can be manipulated by one hand, allowing the operator to clamp on the evening device with the other, and if a vibrator is used to operate this at the same time. This machine is sold exclusively by the J. W. Paxson Co., Philadelphia.



GLENWOOD ROCK-OVER MOLDING MACHINE

Sixty-four of the leading railroads of the country had a total of 1,554,012 cars available for service in 1906, an increase of 92,854 cars for 1905. These 64 roads operate approximately 75 per cent of the total mileage in the United States. A total of 229,189 cars were built in 1906 for domestic purposes. This does not include a number of cars built by various roads in their own shops.

THE GROWTH OF THE SCRAP MOVEMENT

By B. E. V. Luty.

From the not invariably interesting data collected by the United States census may be dug out the following figures of iron and steel scrap used by steel works, rolling mills and forges and bloomaries:

	Gross tons.
1880.....	1,206,818
1890.....	1,747,590
1900.....	4,126,980
1904.....	5,124,277

Blast furnaces, which use some scrap together with mill cinder, scale, etc., are not included in the above, nor are iron foundries which have always been good consumers of the local scrap outcome. The years named are "census years;" for 1880 the period covered was the twelve months ending May 31 of that year; for 1890 the twelve months ending June 30, for 1900 the twelve months ending May 31; for 1904 it is the calendar year, although in all titles the census reports name the year as "1905." In the earlier censuses the business year of some or most manufacturers was used.

The growth of scrap consumption is to an extent shown by these figures. From 1890 to 1900, a period in which our pig iron production increased 50 per cent, the consumption of scrap increased 136 per cent. The table above shows an increase in scrap from 1900 to 1904 of 24 per cent, while the increase in the production of pig iron, comparing the twelve months ending June 30, 1900, with the calendar year 1904, was only 10 per cent.

This latter showing is much more remarkable than the bare figures would indicate. The period covering the second half of 1899 and the first half of 1900 was a period in which more pig iron would have been made in the United States had there been blast furnaces available; in 1904 there were plenty of blast furnaces, and they made a little more pig iron than was good for them. On the other hand, in the second half of 1899 and the early part of 1900 the whole country was being scraped for old material; scrap which had lain neglected for years was gathered in and sent to market, so that the scrap outcome was far above the normal, while that in 1904 was, if anything, below the normal. Conditions as to pig iron production were not so, and accordingly the increase in scrap consumption of 24 per cent, against an increase in pig iron of 10 per cent, really means much more than the mere figures show.

There is a mathematical point in these comparisons which is likely to be lost sight of unless it is particularly pointed out. The general idea as to scrap outcome is that we make pig iron and finished products therefrom in one year, and at some time in the future there is a corresponding outcome of scrap. Now if that were all there were in it, the present increase in the rate of scrap outcome would be exactly the same as was the rate of increase in pig iron production at some indefinite period in the past. As a matter of fact, we are not increasing our pig iron production, in percentage, any more rapidly than we did at any time. Right along we have been doubling our pig iron production in alternate periods of 7 or 8 and 11 or 12 years. If there were nothing else in the problem, then, our scrap outcome would be increasing more and more rapidly in tonnage, but not a bit more rapidly in percentage, than our current production of pig iron. As the percentage increase is much more rapid than that of pig iron, it follows that other influences are at work. The chief of these is that material does not remain so long in use; it gets to the scrap pile sooner than it used to do. There may be another influence, in that a great deal of scrap is made in steel rolling mills now, which would not have been made formerly, because the open-hearth steel furnace affords such a convenient means of utilizing it. Against this, however, must be set the proportionately greater amount of iron rolling in the past, which necessarily involved the production of much more scrap than does steel, as iron does not roll nearly so smoothly and economically as steel.

So we may lay it down as a general law that the present rate of increase in scrap consumption is greater, in percentage, than is or ever has been the rate of increase in pig iron production.

This law is not only well established now, but is going to be still more in point in the future. We are, to an extent, consuming pig iron, but we are, to a much greater extent, putting iron—or rather its products—into useful employment. No one eats pig iron; not a great deal goes to the bottom of the ocean, and there is really not such a great deal which rusts and is irrevocably lost. The great bulk of the pig iron we are making is being put into use and will be used over and over again. In the five years 1902 to 1906 inclusive we made just a hundred million tons of pig iron which, with allowance for imports and exports, unavoidable loss in manufacturing, and the increment due to the use of ore elsewhere than in the blast furnace, means just about a ton for every man, woman and child in the United States. The great bulk of that iron is being used, rather than consumed, whether it exists in a form named cast iron, wrought iron, steel or what not. It required the ten years from 1892 to 1901 to make a hundred million tons of pig iron, and it took practically all the iron history of the country, prior to 1892, to make a hundred million tons. A little over three tons of iron have been made in the United States for every man, woman and child now alive, and we think it is perfectly safe to say that more than two tons is now doing duty. Just now we are adding to our store by nearly a third of a ton a year. We are going to lose less by oxidation in the future, and our population is hardly likely to increase, in percentage, as rapidly as it has. Surely there is some limit to the number of tons of iron sufficient to the satisfying of all the conceivable needs of one individual, more and more, up to the present, man's efforts have been directed to supplying physical needs; surely the time is measured by decades rather than centuries when man will turn and direct the greater part of his attention to supplying purely mental needs.

As the years go by, less and less of the iron and steel which is put into useful employment will be iron which has just been won from iron ore, and more and more of it will be material which has already done duty once or more than once.

The Uses of Scrap.

The term scrap of course includes both new and old material. Designations are naturally loose. Thus a rail second which is rerolled into a lighter section is not called scrap, but theoretically there is no difference between it and a crop which is taken off and returned to the open-hearth furnace because this part would

not make a sound piece of steel.

Scrap is used in three generic ways: (1) where the process involves the changing of its shape only; (2) where there is remelting, with no essential alteration of chemical composition; (3) where there is remelting with a distinct change in the chemical composition.

In practices these uses greatly overlap. Starting with the rerolling of a single piece, as where an old steel rail is rolled into a lighter rail section, into a bedstead angle, or what not, we pass through various rolling mill processes until we come to operations in which a large number of individual pieces are stuck together and rolled so far that their individual idiosyncrasies are largely smoothed over and a better piece of material is produced than would have been the case had not so many different pieces been brought together. Our first way here practically grades into the second, where the admixture is merely more complete. Our second way, again, is not absolutely differentiated from the third. The iron founder who mixes different grades of scrap and pig iron does so with the idea of changing the chemical composition of each, to the average of the whole. In the open-hearth furnace, on the other hand, while some cast scrap is used and has its chemical composition altered more than does the foundry cupola, there is some steel scrap used which is identical in composition with the ingot which is finally produced. The cupola is commonly regarded as a remelting proposition, and the open-hearth furnace as a refining proposition, but when steel scrap goes into the cupola it undergoes more chemical change than when it goes into the open-hearth furnace.

One may classify scrap according to its origin, according to its actual shape and composition, or according to the use to which it is put. From a variety of considerations, it is better for the purpose of this brief discussion to refer to the different kinds of scrap on the basis of how they are to be used. That is, of course, not entirely the practice of scrap dealers, who gather or produce by sorting in their yards some grades of scrap which can go into entirely different channels of consumption, but the generic idea of all scrap movement is to move it into consumption, and the grading in one respect must have this in mind. While the various operations run more or less into each other, we shall endeavor to draw the lines at the best places, and start with

Rerolling Operations.

Rail seconds are rerolled, either by their makers or in some cases by other interests, into lighter rail sections. Rail seconds have only minor defects, and are sometimes used by standard roads in places where the duty is not severe. By usage, rail seconds are not regarded as scrap.

Old steel rails are renewed, where the deformation is in large part due to the wear on one side of the head, and by the flow of the metal in the head. Rail renewing consists almost wholly in restoring the metal in the head to a proper cross section, scarcely anything being done to the web and flange, so that the length of the piece is increased by but a few per cent.

Rail rerolling, on the other hand, is an ordinary rolling operation, and draws the section almost equally in head, web and flange. Fins must be chipped off and the ends of the rail removed. Rail rerolling has become a much more important industry since the railroads have been replacing rails when much less worn than formerly, on account of the heavier loads and greater speeds, and since with the employment of heavier sections it is possible to reroll rails and produce a heavier section than formerly.

Rails are rerolled into various merchant bar sections. There was always a desire to do this, but the high carbon in rails has precluded the use of the product for many purposes, as soft steel is better for punching. Many people have lost money by investing in processes alleged to soften rail steel by some inexpensive process of heating. Of late large tonnages of old steel rails come to be rolled into angles for bedsteads, for which use this kind of steel is particularly adapted. In Chicago there is a regular market for bedstead angles made in this way, which market is fully able to maintain itself on a basis separate from the steel bar or structural market.

Old iron rails, the annual outcome of which is steadily decreasing, are not rerolled into rails, but are rolled into various sections, particularly for the manufacture of nuts.

Old steel and iron angles are used much as billets for rerolling.

The specifications of a leading consuming buyer of old iron and steel rails and axles require axles to be free from locomotive axles, and defective or imperfect forgings, and to be of M. C. B. sizes. Rails are to be 50 pound or heavier sections, not less than 4 feet long in iron rails and not less than 3 feet in steel rails, free from frogs, guards, switches, turntable and curved rails.

Iron and steel shafting is also rerolled, the specifications just quoted calling for round or square, 1½ to 4 inches, 4 feet and longer, straight bars.

Rolling Mill Operations.

These operations run from pure rerolling operations down to pudding, where the chemical composition is as completely changed as it is in making steel from pig iron in a steel works. We shall attempt to take these in logical order, according to this view, starting where we left off under the previous heading.

Muck bar is the product of the puddling furnace, using pig iron with or without scrap. A complete chemical change is here involved, and this will be referred to later. Scrap bar is made in a variety of ways, according to the size and shape of the scrap. Starting with the most convenient material, plate, pipe, etc., can be built into a pile which is heated and rolled into a scrap bar. Piles on boards comprise smaller material, which is piled on a board, which burns away in the furnace, leaving the material stuck together for rolling into a scrap bar. Busheling is done on either a sand or cinder bottom, usually the former, and involves the charging of wrought scrap, properly selected as to large and small pieces, wrought turnings being used to fill interstices when large pieces are also used. Pipe, sheet, wire, hoop, etc., are used with wrought turnings in busheling. Box piles are made with plate sides and ends, and can be filled with small material, including wrought turnings. Cast iron in any form is of course inadmissible in these operations.

Muck and scrap bar are piled, heated and rolled into finished product. The separate pieces have pretty completely lost their identity by the time they reach the finished product, although it can be seen that there has been little of a refining nature in the operations.

Originally puddling was done almost exclusively with forge pig iron, as there was little scrap available. As more scrap has come to hand, the proportion of pig iron used to total product of the puddling furnace has decreased, as it is scarcely material whether virgin pig iron or properly selected cast iron scrap is employed. The operation of the puddling furnace is a refining one, the same as in a Bessemer converter or an open-hearth steel furnace, the differences being that the heat is not

sufficient to deliver the finished product in a molten condition, and that manganese is not added. In the steel making processes the steel is melted; in the puddling operation, as the carbon is eliminated, the material becomes pasty and finally is gathered together into a puddle ball, which is squeezed (formerly largely hammered) to force out the slag.

Steel Manufacture.

Steel scrap was formerly used freely to cool the heat of Bessemer steel, which may easily become too hot with the silicons formerly common in Bessemer pig. Pushing the blast furnace has reduced the silicon while the steel works desires lower silicon to reduce the necessity for using scrap and save it for the open-hearth process.

In the ordinary open-hearth furnace the operation is slow, if only pig iron is used, on account of the great amount of carbon and silicon to be eliminated, and, in the case of the basic process, of phosphorus also. Steel scrap is therefore used, as it is already refined and by mixing with the molten iron dilutes it. The non-scrap processes, such as the Talbot, Monell, etc., proceed in a different way. Instead of taking scrap from the outside, for diluting purposes, they use steel which they themselves have made. In the Talbot process, for instance, part of the steel is poured, cast and rolled, the remainder diluting the molten pig iron which is then added. In the ordinary process the scrap used may have come from the outside, or it may be scrap which was part of a previous heat but had been cast, and the ingot or bloom cropped. There is a mechanical, rather than a chemical difference, in the processes. It makes a great difference in the steel ingot statistics, however, whether the residue of steel remains in the furnace and there is no chance to weigh it, or whether it goes out and is weighed, only to return at once after this little detail.

Cast iron scrap is used also in the open-hearth furnace, but its use is different from that of steel scrap, the cast scrap being used as a substitute for pig iron. It does not ordinarily pay to use cast iron scrap which is suitable for the foundry, as the latter can outbid the steel works. Cast borings are very suitable. They would otherwise go to the iron mill, but the open-hearth steel works has an advantage in the competition in that it has no objection to the presence of some wrought borings or turnings, which for its purposes are the more valuable, while the iron mill would object to this material.

The Foundry.

Foundries use a great variety of scrap. Their requirements are dictated largely by conditions as to scrap outcome. There are so many more foundries than iron mills and steel works that they take up a great deal of scrap at the point of origin. They use little outside of cast iron, which forms a substitute for pig iron. In buying the latter, the chief requirement of many foundries is its scrap carrying ability, and high silicon pig iron is often bought, at an advanced price, for the purpose of carrying a large quantity of scrap through the cupola.

The Competition.

These different channels of scrap utilization are in constant competition. The rerolling mills are in competition with the open-hearth furnaces. Sometimes material suitable for rerolling is cut up for the steel furnace, but the rerolling mills are doing better than formerly in absorbing the material best suited to their needs.

The competition of the steel works with the iron mill has been growing more keen. There is practically no scrap, available in an iron mill, which cannot be used to advantage in the basic open-hearth steel furnace, and the line of demarkation is constantly shifting. The steel works has the advantage of requiring less careful sorting, and puts the material into finished steel with less manual labor than does the iron mill in producing wrought iron products. With various improvements, the basic open-hearth steel process is not dependent upon scrap as it once was; it can get along without it, or at least without any more scrap than its own rolling mills produce, but it is a constant bidder against the iron mill, and the latter must avoid spending too much money on labor, or see its raw material pre-empted.

Ore Docks Improved.—The remodeled ore yards of the Erie railroad, along the old river dock at Cleveland, which have been undergoing extensive improvements, are nearing completion and are expected to be ready for operation in a short time. The yard, which covers an area of 10 acres, has been leveled by a fill of four inches and new 80-pound rails have been substituted along the switch tracks. Electric power is furnished from a new power house. Fifteen old rigs for unloading ore have been torn down, and the plant now practically completed consists of four machines which have a capacity for unloading a 10,000-ton boat in four hours. The plant also has a capacity of loading 600 cars in 12 hours, and is provided with four automatic suspended weighing buckets of 200 tons capacity each.

EMPLOYERS' LIABILITY ACT

And Other Important Bills Passed by the Pennsylvania Legislature.

Harrisburg, Pa., May 25, 1907.—Only three bills importantly affecting manufacturing and railroad interests were passed by the Pennsylvania legislature which closed a session lasting a little over four and a half months on Thursday, May 16. The chief act, and a most drastic measure, is known as the employers' liability bill. It is now in the hands of the governor, and the railroad, manufacturing and mining interests are asking that it be vetoed because of the radical change it makes in the law relative to recovery of damages for death or injury. This bill provides that in actions brought for recovery, "the negligence of a fellow servant of the employee shall not be a defense where the injury was caused or contributed to"—by any defect in plant of which the employer could have had knowledge by the exercise of ordinary care; the neglect of any person engaged as manager, superintendent, foreman or any other person in charge of the works, plant, or machinery; the negligence of any person in charge of or directing the particular work in which the employee was engaged at the time of the accident; the negligence of any person to whose orders the employee was bound to conform and did conform at the time of the injury, or by the act of any fellow servant done in obedience to the rules, instructions or orders given by the employer or any other person who has authority to direct the doing of said act. The manager, superintendent, foreman or other person in charge or control of the works is to be held as the agent of the employer in all suits for damages. The bill was backed by officials of the Mine Workers' Union and of various railroad men's organizations, who sent leaders here, especially the miners, to urge passage of the bill. The governor has until June 16 to dispose of this and other bills.

The railroad commission bill would create a commission of three men with power to inquire into all matters of railway management, charges of discrimination, facilities, accidents and equipment, and in case of finding anything prejudicial to the public interest or in restraint of or showing discrimination in trade to send notice to the offending person or corporation to cease. In case of failure to obey notice the commission is to recommend prosecution by the attorney general through the secretary of in-

ternal affairs. The bill enacts into one general statute a number of laws which have been on the books for years and gives a limited authority. It contains nothing giving rate making powers, although this is held to be covered by the clause giving it authority to investigate and to recommend suit. The bill was passed as desired by Governor Stuart.

A bill was also passed which limits charges for car storage to $1 per day. Other bills providing for track scales, regulating switching and other railroad matters, failed to pass. Bills to enforce provisions of the constitution relative to transportation companies were enacted as expected.

The bills designed to increase tax on stock of manufacturing companies, the business of express companies, and the coal produced in the mines of the state, which it was estimated would have yielded over $9,000,000, were killed in committee.

The state was given greater supervision over water supply, the absolute control of water-sheds and navigable streams, even to state approval on dams and wing walls being voted.

Trolley companies were given the right to do an express business and to carry light freight and a limited eminent domain was conferred upon those engaged in such lines of transportation. They were also given right to use county bridges under certain conditions.

Other bridge legislation, if approved, will give counties right to construct any bridges in their limits upon order of the court and making all county bridges, other than over navigable streams, and state bridges under supervision of the state highway department.

Laws are now up to the governor which will permit foreign corporations not having an office in Pennsylvania nor an authorized agent, to hold real estate and also making valid their contracts.

Liberal appropriations were made for bridge building, one bill carrying $1,500,000; for construction of highways, $6,000,000; for new buildings at state hospitals and other charitable institutions, about $5,000,000; for state armories, $300,000. These bills and the foregoing are now before the governor.

In addition municipalities were given right to condemn land for garbage plants, filter plants and other public works as well as for water supply, these bills having been signed by the governor.

IMPLEMENT INDUSTRY

Affected by Late Season.—Electric Smelting Report.—Canadian News.

Toronto, Can., May 24.—The iron and steel trade, though generally active, especially in the lines of railroad and building requirements, has been to some extent adversely affected by the late opening of the season in the west, and the crippling of the transportation system, rendering deliveries uncertain. The agricultural implement industry has perhaps suffered more seriously than most other lines from this cause. Business is not so good as last year, the western settlers who have had to hold their grain owing to the railway blockade, being unable to buy implements as freely as expected. Western advices indicate that seeding is late and that the acreage sown will be materially decreased. The difficulties in the delivery of orders during the winter and early spring have been unprecedented, so that the prospects for the season's trade in farm machinery and other settlers' supplies are not encouraging.

The St. Thomas Car Co. is being organized by citizens of St. Thomas, Ont., for the manufacture of freight cars with $400,000 capital.

The assets of the William Hamilton Mfg. Co., of Peterborough, Ont., manufacturer of machinery, etc., have been sold by the Trusts & Guarantee Co., the liquidators to R. R. Hall for $192,000 and the creditors have ratified the sale.

The final report on the experiments made some time since at Sault Ste. Marie, Ont., in the electric smelting of Canadian iron ore, has just been issued by Eugene Haanel, Ph. D., Canadian superintendent of mines, under whose supervision much of the work was carried on. The general results were embodied in a preliminary report published last year and received much attention at the time. The present report gives very full data as to the demonstrations with analysis of the raw material employed and the product obtained, as well as illustrations showing the furnaces, etc. An appendix contains recent information as to new inventions and improvements in electric furnaces. It is noted that the first electric smelting plant in Canada for the production of pig iron, and later of high-grade steel, is at present under construction at Welland, Ont., the capital being furnished by R. Turnbull, Canadian representative of the Heroult process and furnaces, R. H. Wolff, American representative of the same interests, and others associated with them. The first furnace is one of 3,000 horsepower of the latest Heroult type, and is expected to produce from 35 to 40 tons of pig iron per day. Power will be furnished by the Ontario Power Co. of Niagara, at a voltage of 12,000, and transformed to the required voltage by transformers of the oil-and-water-cooled type of 750 kilowatts each, supplied by the Packard Co., of St. Catharines. The furnace is so arranged that a 3-phase current can be employed. The plant will be used to demonstrate whether pig iron can be commercially produced by the electro-thermic process, even at a site where the price of power is high and the nearest ore supply 150 miles distant. Some of the ore which will be brought from the Port Arthur district, contains as high as 1½ per cent sulphur, and other Canadian ores of a refractory nature will be used. A second furnace of notably larger capacity will be put up and also a Heroult steel furnace for the manufacture of high-grade steel castings. The electrodes will be manufactured by the Heroult secret process by a plant having a capacity of 18 electrodes per week.

James Ross, president of the Dominion Coal Co., has returned to Montreal from an European trip. The return of President J. H. Plummer of the Dominion Iron & Steel Co., who is also abroad, is expected very shortly, and a meeting between them has been arranged to take place in Montreal in the hope of arriving at an amicable settlement of the difficulty between the companies.

The Garry Brook Co. Ltd., of Alexandria, Ont., has been incorporated by Angus A. McIntosh, Hugh Munro, John A. McMillan, and Donald R. McDonald with $100,000 capital to carry on a foundry and machine shop.

The capital of the Gananoque Spring & Axle Co. Ltd., of Gananoque, Ont., has been increased from $150,000 to $300,000.

AN ACTIVE CAR COMPANY.

St. Louis, May 20.—The Ozan Lumber Co. of St Louis, has placed an order for 25 flat cars, each 40 feet in length, with the H. F. Vogel Contracting & Supply Co., also of this city. The cars are for use on the Prescott & Northwestern Railroad of Arkansas. They will be built by the Danville Car Co., of Danville, Ill., of which H. F. Vogel is president. This is an example of St. Louis progress and energy, as the Danville Car Co., organized with St. Louis capital only six months ago, has already received orders for over 70 cars, and has purchased 2,000 freight cars from the Wabash railroad to be rebuilt. The plant has a capacity of a car a day. Within three months from the date when the erection of the factory was started, 600,000 square feet of space was under roof and the active manufacture of street railway and freight cars was commenced.

RAILROAD INQUIRIES

For Machinery Indicate Increased Interest.—Chicago Market.

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block, May 28.

An increase in the number of larger inquiries was noted by men in the Chicago machinery trade recently. Although orders for the large lists sent out have not yet been placed the attitude of the railroads and large corporations indicates their intention of coming into the market. Small orders have been frequent and deliveries are again showing a tendency to drop behind.

One of the lists that has been hanging fire for some time is that of the Berlin Machinery Co., Beloit, Wis., for its new plant in Canada. The list calls for a large number of machines. The contracts for supplying the machines for the Canadian shops of the Grand Trunk railway and the Portsmouth shops of the Seaboard Air Line have not been placed.

The National Lead Co. has announced the purchase of a large tract of land adjoining its present property on Johnson street between Sixteenth and Eighteenth streets. The property consisted of twenty-five houses and lots directly east of the present site and was bought from various owners for $95,000. It is the intention of the company to build an addition to its present factory to cost $150,000.

BLAST FURNACE GAS FOR POWER AT GARY.

Milwaukee, Wis., May 27.—The Allis-Chalmers Co. has received orders from the United States Steel Corporation for the largest type and greatest number of gas engines ever placed with one concern in the history of the engine building business. Twenty-five engines will be installed at the new plant at Gary, Ind.; seven will go to the Homestead, Pa., plant, and four will be shipped to the Illinois Steel Co. at South Chicago.

Practically all the gas engines furnished the Steel Corporation operate on blast furnace gas. In the older steel plants the installations of gas engines at the present time are being made simply to replace worn out or antiquated types of steam engines, and to take care of increased demands for power caused by the introduction of new mills; but in the new plants, such as the plant which is being put up at Gary, Ind., it is planned to use all of the gas directly in gas engines, and no boilers or steam engines of any description are being installed. Three power houses are now being erected, one of which is being completely equipped, and two of which will receive only partial equipment this year. Each of these power houses is approximately 125 x 1000 feet in ground dimensions. The two partially equipped will contain about half of the ultimate engine capacity. The third power house, which will be fully equipped at once, will be an electric station containing seventeen gas engines direct-connected to 25-cycle alternating-current generators having a total capacity at the switchboard of about 50,000 kilowatts. The power from this station will be used in the rolling mills and also for driving the machinery in the mills in which the slag from the furnaces is converted into cement.

It is pointed out by the maker that blast furnace gas has a very low heat value, containing less than 100 B. T. U. to the cubic foot, as compared with 600 B. T. U. for illuminating gas or 1,000 B. T. U. to the cubic foot for natural gas. In spite of its low heat value it is a most excellent gas for use in a gas engine, and when so used will produce approximately three times as much power per cubic foot as would be produced by burning the same gas under a boiler to generate steam, and using the steam in a compound condensing engine. It thus becomes evident that wherever there is any demand for surplus power at a gas furnace plant there is possibility of practically trebling the power available from the blast furnace gases by using the gas directly in a gas engine instead of using it under a boiler. The change from steam to gas engines, therefore, means a large saving in fuel in the modern plants which have long ago reached the point where with steam-driven units the waste gases were wholly insufficient to supply the power required.

A 4,000-horsepower gas engine weighs approximately 1,500,000 pounds. Each engine requires a space of approximately 40 feet wide by 80 feet in length; and the foundation is of concrete and contains over 2,000 yards of this material.

Will Increase Capital.—The Midvale Steel Co., Philadelphia, which has for many years been operated on a purely nominal capital of $750,000, has decided to increase this amount to $9,750,000, and stockholders will be asked to give the necessary legal ratification of this step on July 13. The company, which has been under the present management about 25 years, has never paid dividends, but has devoted all its profits to extensions and improvements until now it is stated that it has a surplus of $10,000,000.

NEW BOILER COMPOUND

May be Manufactured in Colorado.—Open-Hearth Construction at Pueblo.

(Special Correspondence.)

Pueblo, Colo., May 25.—A new discovery has been made in the vicinity of this city which augurs well for the establishment of a factory for the manufacture of boiler compound. A prominent chemist of Bessemer has discovered a process by which a valuable compound can be made, the principal ingredient of which is extracted from the cactus plant. There is only one variety of cactus which will serve the purpose, the botanical name being epiphyllum. The process includes the reduction of the cactus to a pulp and in this manner the juice is extracted and mixed with other vegetable juices. The main claim for this compound is that it contains no chemicals, which are detrimental in that they attack the metal sheets of the boilers and cause them to corrode. The purpose of this compound is to eliminate scale forming constituents from the feed water, and in this manner prevent the formation of scales in the tubes. The discovery is more or less of a secret as yet, and full details are unobtainable. It is said, however, that the parties interested will erect a factory for the manufacture of the compound. They claim it can be put on the market at a much lower cost than the average compound, for the reason that the cactus plant will grow in almost any ground and without any cultivation whatever.

A new system in the construction of open-hearth furnaces is being given a tryout at the Minnequa plant, and furnace No. 4 has been decided upon for the test. Instead of two ports as formerly, there will be but one when the heater is reopened and instead of laying the bricks in a solid bed of fire-clay, as has formerly been the case, they will be placed in their positions and allowed to remain without binding. The officials at the plant believe they have solved the matter of construction in this line of work and care is being taken to see that everything is in the best possible shape before the fires are lighted. It is thought that the new system will not only result in a saving of materials and fuel, but will allow the furnaces largely to increase twice their former capacity for work, and should the experiment prove sucessful all the furnaces will be converted in the same manner.

Back Numbers Wanted.—A set of complete volumes of THE IRON TRADE REVIEW prior to 1905 is wanted, for which a reasonable price will be paid. Communication should be addressed to the editor of THE IRON TRADE REVIEW.

VAST SUM

Being Lost by San Francisco Employers and Men.—Test Eight-Hour Day.—Labor News.

(Special Correspondence.)

San Francisco, May 25.—The striking iron workers have received their first strike benefit amounting to $2,500. The money was sent here from the national organization of the iron molders, and was distributed among the members of that union. The strike in the iron trades has made 10,000 men idle, some voluntarily, but many by force of circumstances. At the lowest calculation these men, while employed, earned $3.50, or $35,000 a day, over $600,000 in eighteen days since the strike was inaugurated. While the loss falls first and heaviest upon the men and their families on strike, it is an irreparable loss upon the entire community. The effects are felt by dealers, landlords, and all those depending upon the trade and patronage which comes from the wage earners.

A thorough test was made here of the workings of the eight-hour day, and the results have convinced the employers that they cannot continue business upon that basis. The California Metal Trades' Association permitted several of its members to continue operating their plants on a basis of an eight-hour day, with the same pay as for a nine-hour day. All items bearing upon operating expenses under each plan were systematically collected and arranged, and the result showed an increased cost of 25 per cent when operating a plant on the eight-hour day, compared with a nine-hour day.

Much interest attached to the operation of the Fulton Iron Works in conceding the demand of the Iron Trades Council for an eight-hour day. The Fulton is one of the four ship building plants, and one of the largest in San Francisco. When the demand was submitted, that firm had a number of unfinished contracts on hand and it was compelled to grant the eight-hour day to its employes until the work on hand was completed. When the work was finished, the plant closed its doors, paying the workmen the minimum union wage scale of 44 cents an hour for the eight-hour day. The result was that some of the men received less money for that week than they had been receiving on the former basis of nine hours. The Fulton company had been paying pattern makers $5.25; machinists from $3.75 to $4; blacksmiths $4; blacksmiths' helpers $3.50.

The Hercules Powder Works, an extensive plant at Pinole, a manufacturing suburb of San Francisco, paid its workmen the highest wages on the Pacific coast, varying from $5 to $8 a day. The foreman received $12.60 a day and helpers not less than $4.20 a day. The plant employed about twelve non-union machinists, paying them more than the union wage scale, and a higher rate for overtime than the union asked. Because these machinists were not able to join the machinists' union, all the union men struck, and the plant is closed.

Decision is Upheld.

The decision against the legality of picketing made two years ago by Judge Holdom was upheld recently by the Illinois Appellate court. President E. R. Wright and E. S. Besette, of the Typographical union against whom the injunction was directed were ordered to pay the fines imposed on them at that time by Judge Holdom and to serve out the jail sentences of 30 days.

Refuse Union's Demand.

Representatives of 25 machine manufacturers, at a meeting of the Rhode Island Metal Trades Association, May 17, voted unanimously to refuse to consider the demands made by the machinists' union. The association takes the ground that these demands constitute an unwarranted interference with the right of both employer and employe, and are detrimental to the successful operation of the open shop, for which the association stands. The demands made on the Providence machine concerns include a 50-hour week; all overtime to be paid at the rate of time and one-half; minimum rate of 40 cents per hour for toolmakers; 5 cents an hour increase for machinists and handymen; one apprentice to every five machinists; an increase of 2½ cents per hour for apprentices; reducing hours of work to 40 instead of reducing the force in case of decreased business; old employes to have preference for such work as they may be able to perform, and the board of arbitration to take up all grievances.

Labor Notes.

The Fulton Iron Works, St. Louis, has reached a settlement with its striking employes and the men have returned to work.

The Toledo Stove & Range Co., Toledo, O., has granted a five per cent increase in wages to its employes in the molding department.

About 100 union molders have gone out on a strike at Tacoma, Wash., on the refusal of the employers to accede to their demands for an eight hour day and a daily wage of $3.75.

The National Metal Trades Association has secured large and commodious offices for its acting commissioner and his force. The commissioner's office is now located on the tenth floor of the new Fourth National Bank building, Cincinnati.

DEATH OF GEORGE R. DUNELL.

George Robert Dunell, for nearly 24 years connected with *Engineering*, London, and a prominent character in the engineering world, died Sunday, May 12, at the age of 60. He had attended practically every meeting of the Institution of Mechanical Engineers, the Institution of Naval Architects, the Iron and Steel Institute and the British Association for the Advancement of Science.

GEORGE R. DUNELL.

After obtaining a liberal education, he started as a chemical manufacturer in London. Dissatisfied with this work, he entered a chemical works at Manchester and from there went to his father's works, being largely interested in the engineering end of it and serving there as an apprentice. He traveled in America and on the continent, for a time acting as London representative of a firm of chemical manufacturers. Engineering being his chief aim and natural tendency, he entered the office of James Pollock to complete his training. He then became representative for Messrs. Herreshoff. In the American works of this company, he studied the different articles manufactured, returning to Europe to sell them. He was invited to St. Petersburg by the Russian government to instruct naval engineers to run torpedo boats, and left Messrs. Herreshoff to become engineer to the Castle Steel & Iron Works of Milford Haven, holding this position until 1884, when the works closed. At this time he turned all his efforts toward journalism, first writing for the *Field*. In 1883, he joined the staff of editors on *Engineering*, but also was a contributor to other publications, having traveled to America in the interest of the London *Times*. He was one of the authors of the widely-read series of articles on "American Competition," published in *Engineering* some years ago.

The Northern Iron & Steel Co., of Collingwood, Ont., has gone into voluntary liquidation, the reason assigned being want of operating capital. The Union Trust Co., of Toronto, has been appointed liquidator and the plant will be sold. The liabilities amount to about $60,000 of which some $3,500 are unsecured.

Renewed Stock Activity Brings Declines.

An acute weakness, attributed to the renewal of a good sized liquidating movement, developed in the stock market in the week under review and expressed itself in declines generally of active stocks, some of which were of sharp proportions. The average price of 20 active stocks on Wednesday touched the lowest point since March 25, resembling in some respects the expected "secondary decline" which usually carries prices back somewhere near the panic level. The week's decline halted about 4 per cent in the averages above the low stage of March 25, and then there was moderate recovery. An indication that is interpreted by some as pointing toward a renewal of speculative interest in the market has been the strong borrowing demand for stocks in the latter part of the week. This was illustrated in the case of United States Steel common, which, on account of its large volume, is usually available for borrowing or lending operations. On several occasions in the week the calls of borrowers for this stock were so strong that those traders providing the accommodation paid no interest on the deposits made to insure the repayment of the securities. There is a wide diversion of opinion as to what proportion of this borrowing demand represents actual short interest as distinct from a technical short interest created by the sales of stocks "to arrive" or sales against real holdings which for some reason or another may be held back, the seller borrowing stocks to make deliveries in preference to surrendering his own shares. Iron and steel stocks readily succumbed to the market's influence and declines were uniform. In some cases these losses were pronounced. Bethlehem Steel preferred declined 9 points, Tennessee Coal, Iron & Railroad 7¾ points, Virginia Iron, Coal & Coke 7 points, New York Air Brake 5 points, and United States Steel common 3¼ points. United States Steel stocks were active, 460,100 shares of common, and 58,715 shares of preferred being marketed. The New York bank statement was unusually favorable, an increase of nearly $6,000,000 in the total cash reserves, and $4,200,000 in the excess reserves being shown. This gain raises the amount held by the banks in excess of their legal reserve requirements to $15,700,000, as compared with $6,700,000 last year, and $11,500,000 two years ago. Total transactions on the New York stock exchange for the week showed a large increase, 4,443,400 shares being sold, compared with 2,742,946 shares last week, and 3,715,960 shares the corresponding week in 1906. Bonds have been dull with a declining tendency. A firmer monetary situation prevails, the maximum for call rates being 2½ per cent. Time funds were distinctly firmer.

The Republic Iron & Steel Co. has declared a dividend of 2 per cent on account of back dividends on the preferred stock, payable July 1, which will satisfy all arrears of dividends on the stock. The company suspended dividends on this issue with the distribution of October, 1903, and they were not resumed until October, 1905. The total in arrears was 12¼ per cent. In addition the company has declared the regular quarterly dividend of 1¾ per cent on the preferred stock, payable July 1. Other dividend declarations include the Railway Steel Spring Co., regular quarterly dividend of 1¾ per cent on the preferred stock, payable June 20, and the South Baltimore Steel Car & Foundry Co. dividend of 3 per cent on the common stock, payable June 28.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. May 25	Changes In Week	Date 1907 Ann. Meet.	Stock Outstanding	Dividend Basis	Dividend Last Paid	Dividend Date Last Div. Pay.
Allis-Chalmers	10¼	−1⅝	Sept.	19,830,000			
Allis-Chalmers pr	26⅜	−3⅛		16,150,000	7 cum		Feb., 1904
American Can	5⅛	− ¼	Feb.	41,233,900			
Am. Can pr	54	− ⅛		41,233,300	7 cum	5 Q.	Apr., 1907
Am. Car and Fdy	36	−1	June 27	30,000,000		2 Q.	Apr., 1907
Am. Car and Fdy pr	98⅜	−1⅛		30,000,000	7 n. c.	7 Q.	Apr 1907
American Loc	57⅜	−3¼	Oct. 5	25,000,000		1¾ Q.	May, 1907
American Loc. pr	106			24,100,000	7 cum	1¾ Q.	Apr. 1907
American Ship.	72¼	−1⅝	Oct. 2	7,600,000	6	1 Q.	Mar. 1907
American Ship. pr	105	+ ⅛		7,900,000	7 n. c.	1¾ Q.	Jan. 1907
Am Steel Foundries	6⅜	− ⅜	Oct. 1	15 810,000			
Am. Steel Foundries pr.	36	−2		17,240,000	6 cum		Aug., 1904
Barney & Smith	70		June 4	2,000,000	4	4	Mar., 1907
Barney & Smith pr	138½			2,500,000	8 cum	8 Q.	Mar., 1907
Bethlehem Steel	11	−1	April 2	14 862,000			
Bethlehem Steel pr	40	−9		14,908,000	7 n. c.	1¾ Q.	May, 1907
Cambria Steel	37	− ¼	Mar. 19	45,000,000*	6	3 Q.	Feb., 1907
Cambria Iron	47¾			8,468,000*	4	4 S. A.	Apr., 1907
Chicago Pneumatic Tool	41⅛	− ¼	Feb 18	6,145,800	4	4 Q.	Apr., 1907
Colorado Fuel	29¼	−2¼	Oct. 21	30,132,000			Apr., 1902
Crucible Steel	8⅞	− ⅛	Oct. 16	24,578 400			
Crucible Steel pr	70⅛	−1⅞		24,436,500	7 cum	6	Mar., 1907
Empire Steel	10	+2	Feb. 27	2,281,400			
Empire Steel pr	50	−1		2,500,000	6 cum	3 S. A.	July, 1906
Fay & Egan	100		Feb. 19	1,000,000	6	1½ Q.	May, 1907
Fay & Egan pr	128½			1,000,000	7 cum	1¾ Q.	May, 1907
General Electric	140	−2	May 14	63,643,600	8	8 Q.	Apr., 1907
Harbison-Walker	10	−1⅛	Jan. 21	13,000,000	6		
Harbi on-Walker pr	73	− ½		9,600,000	6 cum	6 Q.	Jan., 1907
International Pump	23	−2	June 4	17,762,500		2	Apr., 1905
International Pump pr	74¼	−4¾		11,350,000	6 cum	6 Q.	May, 1907
Lackawanna Steel	55		Mar. 13	34,971,400			
Lake Sup. Corp	9	− ⅛	Oct. 2	40,000,000			
New York Air Brake	110	−5	June 18	10,000,000	8	8 Q.	Apr., 1907
Niles-Bement-Pond	130		Feb. 6	5,000,000	6	6 Q.	Mar. 1907
Niles-Bement-Pond pr	105			2,000,000	6 cum	2 Q.	May, 1907
Otis Elevator Co	35		March 18	6,350,300		3 A.	Apr., 1907
Otis Elevator Co. pr	80			6,308,500	6 n. c.	6 Q.	Apr., 1907
Penn. Steel	60		May 13	10,750,000			
Penn Steel pr	101			16,500,000	7 n. c.	3½ S. A	May, 1907
Pittsburg Coal Co	11¾	− ⅛	Feb. 11	32,000,000			Nov., 1906
Pittsburg Coal pr	52¾	−2⅜		32,000,000	7		Apr., 1905
Pressed Stl Car	31	−3	Feb. 20	12,500,000		3	Aug., 1904
Pressed Stl. Car pr	89⅜	−2½		12,500,000	7 n. c.	1¾ Q.	May, 1907
Pullman	165	−3	Oct. 17	100,000,000	8	2 Q.	May, 1907
Railway Stl. Spring	40	−4	Mar 7	13,500,000		4 S. A.	Mar., 1907
Railway Stl Spring pr.	92	−2		13,500,000	7 cum	7 Q.	Mar. 1907
Rep Iron& Steel	25	−1	Oct. 9	27,191,000			
Rep Iron & Steel pr	84⅛	−1⅞		20,416,900	7 cum	7 Q.	Apr., 1907
Sloss-Sheffield	54⅞	−4½	Mar. 5	10,000,000	5	5 Q	Oct., 1906
Sloss-Sheffield pr	98	−1⅝		6,700,000	7 n c	7 Q.	Apr., 1907
Tenn. Coal & Iron	139	−7¾	May 7	22,553,000	4	4 Q.	May, 1907
U. S. Pipe & Fdy	33½	−2	June 26	12,500,000	4	4 Q.	Dec., 1906
U. S. Pipe & Fdy. pr	82	−1⅛		12,500,000	7 n. c.	7 Q.	Dec., 1906
U. S. Steel	32½	−3¼	April 15	508,302,500	2 n. c.	½ Q.	Mar., 1907
U. S. Steel pr	97⅞	−1⅞		360,281,100	7 cum	7 Q.	Feb., 1907
U. S. Steel 5's	95¾	−1		463,796,000	5	5 A.	
Va. Iron, Coal & Coke	64	−7	Sept. 17	8,641,600			
Westinghouse Elec	143¾	−2¼	July 24	24,998,700*	10	10 Q.	Apr. 1907
West'ghouse Air Brake	145	−3	Oct. 1	11,000,000*		22½ Q.	Jan., 1907

Par value of shares, $100, except those starred, $50.

Financial Notes.

The American Shovel & Tool Co., a corporation organized under the laws of New Jersey, in its report of its condition on March 1, 1907, to the secretary of the state of Massachusetts, showed total assets of $5,534,119, as compared with $5,437,701 the corresponding year of 1906.

NEWS FROM MANY INDUSTRIES.

New Buyers:—

The Galena Iron Works Co., Galena, Ill., has been organized with a capitalization of $160,000.

The Globe Steel Co., Mansfield, O., has been incorporated by Burton Preston and others with a capital stock of $5,000.

The Optenberg Iron Works Co., Sheboygan, Wis., has been incorporated with a capital of $50,000 by J. Henry Optenberg, William Moeller, and Paul T. Krez.

The C. G. Dauber Machine Co., Oshkosh, Wis., has been chartered with an authorized capital of $10,000 by Charles G. Dauber, L. A. Pomeroy and C. W. Vande Walker.

The Wisconsin Stamped Steel Co., Madison, Wis., has been organized with a capitalization of $50,000 by Charles V. Pollock, Horace H. Ratcliff, and Russell R. Bates.

The Tacoma Ornamental Iron & Wire Works, Tacoma, Wash., has been formed by H. E. Paul, H. A. Paul, and Albert Stoves, with a capital of $10,000.

The Cincinnati Horseshoe & Iron Co., Cincinnati, has been incorporated by Morgan Wamsley, C. E. Hooven, Frank C. Graham, L. B. Daniels, and William Hoffman.

E. L. Kern, J. K. Neagley, and N. F. Bicking have organized the Radial Spring Wheel Co., Trenton, N. J., with a capital of $100,000 to manufacture springs, spring wheels, etc.

The Atlanta Blow Pipe & Mfg. Co., Atlanta, Ga., has been chartered with a capital of $10,000 to manufacture furnace feeders and fans, by H. J. Henchy, George L. Bell, and others.

The New England Foundry Co., Buckfield, Me., has been organized with a capitalization of $10,000 by H. B. Hayden, R. F. Drew, Buckfield, Me., and C. H. Hersey, Flemington, N. Y.

H. J. Fish, Louis A. Lamm, W. E. Metzel, Ben F. Coombs, Henry L. Moore, and W. J. Devol have incorporated the Indestructible Steel Wheel Co., Lebanon, Ind., with a capitalization of $50,000.

The Redington Steel Co., Camden, N. J., has been incorporated with a capital of $250,000 by William Bailey, 1221 Land Title building, Philadelphia, and Joseph S. Swain, Bordentown, N. J.

Igoe Bros. & Cooney, Brooklyn, N. Y., have been formed to manufacture steel, iron, etc., with a capital of $12,300 by Andrew Igoe, Peter Igoe Sr., and John Cooney, 63 Metropolitan avenue, Brooklyn.

The Janusch Mfg. Co., New York, capital $62,000, has been incorporated to manufacture brass, iron and metalware, by Francis Hager, Rosa K. Janusch, and Clara K. Janusch, 728 East 140th street, New York.

The Reliance Steel Foundry Co., Trenton, N. J., has been formed with a capitalization of $150,000 by Cornelius Valentine, Short Hills, N. J.; Charles P. Watson, New York, and C. Henry Stauffer, Philadelphia.

The Ward's Engineering Works, Charleston, W. Va., capital $250,000, has been chartered to manufacture water-tube boilers, machinery, engines, etc., by Harrison B. Smith, R. S. Spillman, Buckner Clay and others.

The Pennsylvania & West Virginia Steel Co., Petersburg, Grant county, W. Va., has been incorporated by Charles Adamson, 119 South Fourth street; J. E. Davis, M. H. Leonard, W. E. Stokes, and H. S. Williams, all of Philadelphia, Pa.

The National Railway Signal & Mfg. Co., Chicago, Ill., has been chartered to manufacture machinery and mechanical appliances, by Joseph T. Sauer, Albert H. Graves, and Frank L. Belknap. The capital stock of the new company is $10,000.

The Kool Metal Mfg. Co., New York, has been formed with a capitalization of $25,000 to manufacture metal goods by John S. Bushnell, 283 Park place; George Young, 374 Stanhope street; Frederick O. Kilcham, 536 Eighth street, all of Brooklyn.

The Ajax Grapple Hook Co., Hoboken, N. J., has been organized with a capitalization of $50,000 to manufacture grapple hooks, iron, brass and metal castings by Newton R. Marwin, Quincy L. Morton, and Henry S. Morton, all of the above address.

Articles of incorporation have been filed by the Des Moines Engineering Co., Des Moines, Ia., with a capital of $10,000. The incorporators are: Robert B. Peters and Stephen Christie. The company will engage in a general machine manufacturing business.

The Porter Tool & Supply Co., New York, capital $10,000, has been incorporated by Edwin S. Porter, 100 William street; George F. Cornwell, 284 Church street, both of New York, and E. L. Dare Porter, 888 Park Place, Brooklyn. The company will manufacture presses, tools, dies, machinery, etc.

The Sullivan Engineering Co., Hudson, N. Y., has been organized to build electric, steam and water power generating plants and manufacture metal articles. The capital stock of the company is $20,000, and the incorporators are: William E. Bravender and Charles R. Rinehart, Hudson, N. Y., and Michael H. Sullivan, Poughkeepsie, N. Y.

The Columbia Metal Supply Co., Brooklyn, N. Y., has been incorporated to manufacture engines, boilers, machinery, tools, etc. The capital stock of the company is $5,000, and the incorporators are: Charles A. Wessell, Florence H. Wessell, 300 Carlton avenue, Brooklyn, and Burnham W. King, 318 West Eighty-fourth street, New York.

New Construction:—

Rumsey & Co., Seneca Falls, N. Y., manufacturers of pumps, are having plans prepared for the erection of a foundry addition, 50 x 90 feet.

The Hall Steam Pump Co., Allegheny, Pa., is contemplating the erection of a new foundry 60 x 120 feet of brick and steel construction.

The Cylinder Safety Valve Co., Mansfield, O., is erecting a plant 42 x 140 feet in that city. Heretofore the company has had its products made under contract.

The Vilter Mfg. Co., Milwaukee, Wis, is preparing to rebuild and enlarge its pipe working department. The company builds ice making and refrigerating machinery and Corliss engines.

The Delphi Machine Works, Delphi, Ind., has been granted a strip of land adjoining its present building by the commercial club of that city, and will erect a one-story addition 60 x 70 feet.

Plans are about completed for the new plant which the Samuel C. Tatum Co., Cincinnati, founder, will erect in that city. The main building will be five stories high of mill construction 60 x 266 feet. The foundry building will be of steel construction one story high 110 x 300 feet.

The Golden Novelty Mfg. & Foundry Co., Forty-sixth and Grand avenues, Chicago, is considering the erection of an addition to its present plant. If the plans are carried out, the building will be one story 65 x 200 feet of concrete and brick. Charles D. Golden is president.

The James A. Brady Foundry Co., Chicago, is planning to erect a foundry at Thirty-fifth street and Ashland avenue. The property has been leased for 20 years and it is provided that a foundry building shall be erected. The site contains 48,000 square feet of ground.

H. L. Gilman & Co., 32 Linden street, Brookline, Mass., engineers and architects, will erect a steel foundry for the making of structural and general steel castings in connection with the present contracting business. H. L. Gilman of the company would like to get into correspondence with builders of machinery along this line.

The Carolina Engineering Co., Burlington, N. C., is proceeding with the construction of its proposed plant. The main building will be a steel structure 70 x 150 feet. Steel bridges and general structural steel will be manufactured. All equipment has been purchased. L. C. Carter is general manager, and W. K. Scott secretary and treasurer.

The Acme Tag & Mfg. Co., Minneapolis, Minn., manufacturer of wood and metal-working machines, tools, tags and novelties, is making preparations for the erection of a new plant, but does not believe it will construct more than 10,000 square feet this year. The new plant will be operated by individual motors and no steam power whatever will be used.

Fairbanks, Morse & Co., Chicago, have leased for 20 years the property at the southwest corner of Eldridge court and Wabash avenue. An eight-story building of brick and steel, mill construction, will be erected, with ground dimensions of 42½ x 165½ feet. The company at present is located at Monroe and Franklin streets. It deals in scales, windmills, gas and gasoline engines, steam pumps, electric motors and dynamoes, and general supplies.

The Amherst Foundry Co., Amherst, N. S., which recently underwent damage by fire, is rebuilding the destroyed structure 60 x 300 feet, two stories, and is restoring and replacing the patterns and machinery as fast as possible. The building which was destroyed was used by the company as an enameling plant and contained a large amount of stock, both manufactured and raw materials, patterns and machinery. The company expects to be in running order again July 1.

The High Point Machine Co., engineer, founder, and machinist, High Point, N. C., recently incorporated, reports that it will build a foundry, machine shop and woodworking shop on the property recently acquired, and will install some new equipment. The buildings will be erected by local workmen under the company's supervision. It has not yet been determined what equipment will be required. C. Seymour Dutton is president of the company.

Joseph T. Ryerson & Son, Chicago, have made arrangements to abandon their present building at Milwaukee avenue, Canal, Lake, and Clinton streets. Property has been purchased to the west of their plant and a three-story building to be used for offices and salesroom for lighter machinery will be erected. The present building is on the site of the new Northwestern depot. The new structure probably will not be completed until the first of the year and the firm will occupy its present offices until that time.

The Prime Steel Co., Milwaukee, which suffered a serious fire in its foundry, May 7, has adjusted its insurance and is now rebuilding the burned structure. The new foundry, which is now being rushed to completion, will be 80 x 140 feet of solid brick saw tooth construction and modern in every respect. The power plant, cleaning room, core room and pattern storage will also be of solid brick. The pattern storage will be strictly fire-proof. All of the necessary new equipment has been ordered.

The Rusk Iron Co., Rusk, Tex., recently incorporated, is organizing the Texas Iron & Steel Co. and is contemplating the erection of a rolling mill of 100 tons capacity daily, besides repairing and adding to present furnace equipment. The company at present has a pipe foundry, cast houses and power plant already on the site. It operated one month with an old hot-blast furnace, but found that it could not get sufficient heat for manufacturing iron with coke. When operations are resumed, it is proposed to have its furnaces equipped with modern iron stoves and more blowing engines. The bar iron trade of Texas alone and the cotton tie demand of the south is believed by the promoters to furnish ample business possibilities for their output. In addition a cement plant of 1,500 barrels capacity daily, to utilize the slag from the furnaces, will be erected. The company controls an ore deposit of about 8,000 acres, estimated to contain 80,000,000 tons of brown hematite ore, running about 53 per cent metallic iron. The tract contains 14,000 acres, of which 10,000 acres are heavily timbered with yellow pine and some oak. A lime quarry of 200 acres and a clay bank well adapted for cement are also controlled. It is expected to lay out a town site on the Cotton Belt railroad. The Rusk Iron Co. intends to sell to the Texas Iron & Steel Co., and will operate as one organization. W. H. Oatkey, Rusk, Tex., is general manager.

The Youngstown Car Mfg. Co., Youngstown, O., has awarded the contract for the construction of an addition 55 x 260 feet to its plant at Haselton.

General Industrial Notes:—

The Killing Molding Machine Co., Davenport, Ia., has filed amended articles of incorporation, increasing its capital stock from $20,000 to $40,000.

The machinery and entire equipment of the Coshocton Machine Mfg. Co., Coshocton, O., has been sold by the receiver to the Wherle Co., Newark, O., stove manufacturer.

The land, buildings and personal property remaining at the old buildings of the Bloomington Stove Co., Bloomington, Ill., have been purchased by the First National bank of that city.

The Wahle Foundry & Machine Co., Rock Island, Ill., has purchased a brick building 40 x 140 feet, three stories and basement, which it will utilize as an assembling and paint plant and store house.

The chamber of commerce, Port Clinton, O., has decided to accept a proposition from outside parties to locate a foundry at that place to employ 75 men. A site has been purchased and the work of construction will soon begin.

The West Steel & Iron Casting Co., Cleveland, has increased its capital stock from $30,000 to $60,000. The company has been operating its plant at East Seventy-ninth street since Feb. 1. No extensions are contemplated at present.

At the annual meeting of the stockholders of the Orient Coke Co., Uniontown, Pa., the following officers were elected: President, Julian Kennedy; vice president, Robert Bentley; secretary and treasurer, Reed Kennedy; general manager, O. W. Kennedy, and assistant secretary, R. M. Fry.

The Joliet Iron Products Co., Joliet, Ill., a new corporation which will erect a plant in that city, has placed its contract for equipment, and hopes to be in operation some time in the fall. The work of clearing the site for the foundation of the mill is progressing.

At the meeting of the stockholders of the Columbus Forge & Iron Co., Columbus, O., the board of directors

was authorized to increase the capital of the company from $125,000 to $200,000. The increase in the capitalization has been necessitated by the rapidly expanding business of the company.

At the annual meeting of the board of directors of the Norwalk Steel & Iron Co., Norwalk, O., the following officers were elected: President and attorney, A. M. Beattie; vice president and general sales agent, W. E. Stockton; scretary and treasurer, Jas. G. Gibbs; general manager, C. T. Torsell.

The Ontario Iron Ore Co., Ontario, N. Y., recently incorporated, is installing modern machinery, including steam shovels, derricks, drills, locomotives, elevated skips and steam pumps, in its mine and expects to be in operation within 30 days. The output of the mine is expected to be from 500 to 1,000 tons daily for 20 days each month of a hematite ore assaying 50 per cent iron.

Trade Notes:—

The foundry department of the Phillips & Buttorff Mfg. Co., Nashville, Tenn., has recently added to its equipment a 16-ton per hour Newton cupola, manufactured by the Northern Engineering Works, Detroit.

The Pittsburg Automatic Vise & Tool Co., Pittsburg, has completed arrangements for exhibiting what is said to be the largest vise ever constructed, at the convention of Master Car Builders and Master Mechanics at Atlantic City, June 13 to 20. The tool will be operated by electricity, the double swivel movement being visible at all times. It weighs 695 tons and has a jaw opening of 15 inches.

Fires:—

The machine shop of Wood & Clark, Berkey, Va., was damaged by fire May 19.

Furnace No. 1 of the Shelby Iron Co., Shelby, Ala., suffered damage from fire May 17.

The plant of the Littlefield Stove Co., Albany, N. Y., was damaged to the extent of $20,000 by fire May 15.

The Watt Ornamental Iron & Wire Co., Pittsburg, Pa., and the pattern and model plant of Brush & Stevens were burned May 17.

The Fulton Machine & Vise Co., Lowville, N. Y., suffered a disastrous fire May 19, which greatly damaged its plant. The principal damage was done to the machine shop and store house. The loss is estimated at about $25,000, and the insurance is $14,000. V. Lansing Waters is president of the company.

FIRST SETTLEMENT

Of Labor Dispute Made by Conciliation Board—Canadian Industries.

(Special Correspondence.)

Toronto, Can., May 26.—The first settlement of an industrial dispute by a conciliation board under the new labor law has been effected, the parties being the Grand Trunk Railway Co. and the machinists in its employ. The board was composed of Wallace Nesbitt, K. C., Toronto, representing the company; John G. O'Donoghue, representing the men, and Prof. Adam Shortt, of Queen's University, Kingston, Ont., as an independent third party. The full details have not been made public, but it is announced that the company takes back 110 men who have been out for two years, concedes an increase of pay, and agrees to allow the men to belong to the union. Overtime pay for legal holidays is agreed upon. A great many technical matters affecting machinists throughout the system are also settled. Objections made by the men to shop rules will be overcome by full explanations or by amendments in some cases. The settlement is regarded as a triumph for the principle of the law, the distinctive feature of which is that the decisions of the board are non-compulsory, neither party being bound to accept them.

General Manager Hays, of the Grand Trunk railway, states that the company has closed a contract with the Canadian Bridge Co. for the erection of enlarged shops at Stratford, Ont. The present boiler and erecting shops will be replaced by a new steel and cement structure 175 by 950 feet. The shops will be run by electric power throughout. The machinery will include an immense 120-ton crane capable of lifting large locomotives from one end to the other of the building.

The Algoma Steel Co., Sault Ste. Marie, Ont., will at once commence the erection of a $1,000,000 blast furnace which will be the largest in Canada. The company has found itself handicapped lately by being unable to procure Canadian-made pig iron fast enough to supply the plant. A coke plant to supply the steel works will also be put in.

Hon. Wm. Templeman, Canadian minister of mines, has authorized the collection of authentic information for a detailed report on the mining and metallurgical industries of Canada. It will deal only with mines either actually producing or under development and metallurgical plants and will comprise very full particulars as to the companies engaged, the character and quality of the raw material, and the output, the process employed, cost of production, etc.

The new plant of the London Fence Co., Ltd., of Portage la Prairie, Man., manufacturer of wire fencing, was destroyed by fire on the 20th. The loss is estimated at $70,000, and the building and contents were insured for $45,200.

It is announced that no more contracts on the National Transcontinental Railway or Grand Trunk Pacific will be let until next fall, when it is probable that tenders for some of the missing links will be called for.

The capital of the Cockshutt Plow Co., Brantford, has been increased from $750,000 to $3,000,000.

Thos. Craig, Wm. B. Powell, Wm. H. Mussen, and Joseph W. Harris have been incorporated as the J. W. Harris Mfg. Co., Ltd., to do business as engineers, machinists, etc., at Montreal, with $1,000,000 capital.

The Standard Fitting & Valve Co., Ltd., of Guelph, Ont., capital $100,000, has been incorporated by Henry Aird, George W. Aird, Elber Pratt, John M. Taylor, and George D. Forbes.

NEW ENGLAND NEWS NOTES.

Worchester, Mass., May 27.—A. E. Wyman, of Springfield, formerly of Turner's Falls, who was in the employ of the Knox Automobile Co., has taken the position of superintendent for C. F. Church Mfg. Co., Holyoke.

The Washburn Shops, Worcester, has just installed a new 24-inch Prentice upright drill, latest improved pattern. An order has been placed with the Sprague Electric Co., Boston, for a 3-ton special hoist for the foundry.

The Norton Grinding Co. is building an addition to its plant 275 feet x 86 feet, consisting of main floor and galleries on the north and west sides. The north gallery is 32 feet wide the whole width of the building and the west gallery is 23 feet the whole length of the building. The entire building is to be used for assembling purposes. One crane, 40 feet span, will run over the main erecting floor, and another crane 20 feet span will run over the east bay. This addition will double the capacity of the plant. The original building runs north and south, and the new office building, recently put up, forms an ell, connecting with the north end of the building. The present new addition connects with the opposite, or west end of the office building, running north and south, thus making the plant, when the new assembling building is done, the shape of the letter U.

An accident to the blowing engines of the Musconetong furnace at Stanhope, N. J., has seriously crippled it, and may even make it necessary to bank the furnace for two or three weeks. Most of its iron is used by the Singer Sewing Machine Co.